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December 11, 2009

TDD No.: TO2-09-09-09-0002 Contract No.: EP-S5-08-01

E&E Project No.: 002693.2053.01RA

Robert Wise, Federal On-Scene Coordinator Chris Weden, Federal On-Scene Coordinator United States Environmental Protection Agency Emergency Response Section 2250 Obispo Avenue, Suite 102 Signal Hill, CA 90755

Subject: Halaco Building Assessment Letter Report

6200 Perkins Road, Oxnard, Ventura County, California Latitude: 34° 08'19.43" North, Longitude: 119° 10'58.58" West

INTRODUCTION

The United States Environmental Protection Agency (U.S. EPA) Emergency Response Section (ERS) Federal On-Scene Coordinator (FOSC), Robert Wise, tasked Ecology and Environment, Inc.'s Superfund Technical Assessment and Response Team (START) to provide support during a removal assessment of two buildings at Halaco Engineering Company (Halaco) in Oxnard, Ventura County, California. The focus of this investigation was to determine the presence or absence of radiological surface, heavy metals, and other chemical contamination throughout the smelter and baghouse buildings to aid in the planning for potential building demolition.

SITE DESCRIPTION

The Halaco site is located at 6200 Perkins Road in Oxnard, Ventura County, California, approximately 14 miles southwest of U.S. Highway 101 (Attachment A, Figure 1). The site is bordered to the north by the Weyerhaeuser Company Hueneme Paper Mill, to the east by Nature Conservancy Lands, and to the south and west by Ormond Beach, Ormond Beach Lagoon, and the Ormond Beach Wetlands. The site is bisected by the Oxnard Industrial Drain (OID), which drains to the Pacific Ocean approximately 300 feet to the south of the Halaco property. The waste disposal parcel of the property is located to the east of the OID and is approximately 26 acres in size. The smelter facility is located on the west side of the OID and consists of approximately 11 acres (Attachment A, Figure 2). A fence surrounds the site perimeter, but indications of trespassing and vandalism are obvious throughout the site.

The focus of the U.S. EPA ERS removal assessment was two dilapidated structures located on smelter facility portion of the property: the smelter building and the baghouse building. The smelter building is approximately 37,200 square feet (ft²) is size, and the baghouse building is approximately 8,400 ft² in size (Attachment A, Figure 3 and 4). The buildings are essentially empty structures; waste and raw material were removed from the site during previous U.S. EPA-

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led site activities. Four furnace structures are located inside the smelter building, and each furnace contains solid residue. Two above-ground storage tanks (ASTs) are located inside the baghouse building, and both ASTs contain very small amounts of tank bottom solid residue. Dusts from the smelter building connect to the baghouse building and the adjacent baghouse. Sub-floor vaults exist in each building and contain residue solid material from site operations (Attachment A, Figure 3 and 4). Both buildings are in poor structural condition (Attachment B). The City of Oxnard Building and Engineering Services approved of the U.S. EPA and START investigation approach, but warned that intrusive sampling activities were not to be conducted given the questionable structural integrity of the buildings.

BACKGROUND

Halaco conducted metal recycling operations at the facility from 1964 to 2004. Scrap metal, including low-level radioactive material, was processed at the site. Aluminum and magnesium from shredded cans, machine shop borings, aluminum-copper radiators, and blocks of partially processed scrap aluminum from other countries was recycled by Halaco. In 2002, Halaco filed for bankruptcy protection and reorganization under Chapter 11 of the U.S. Bankruptcy Code, and later ceased operations in 2004. The U.S. Bankruptcy Court converted the case to Chapter 7, liquidation bankruptcy, in 2006. An in-depth file review for Halaco was conducted by the START in 2006, and a detailed site and regulatory history was prepared under Technical Directive Document (TTD) No. 09-05-11-0002.

In 2006 and 2007, site assessments led by the U.S. EPA indicated the presence of various heavy metal contamination and cesium-137, potassium-40, thorium-228, thorium-230, and thorium-232 radioactive contamination in the soil in the southeast corner of the smelter facility and in the waste disposal area. In 2006, the START was tasked to provide potential responsible party (PRP) oversight for the cleanup, consolidation, and removal of potential state and federal hazardous waste from the site. An U.S. EPA-led stabilization and removal action in 2007 focused on the stabilization of the waste management unit located on the waste disposal parcel of the property. Additional detail regarding the PRP oversight activities and the U.S. EPA-led site stabilization and removal action are summarized in a START report prepared under TDD No. 09-06-04-0007.

The Halaco site has been listed on the U.S. EPA Superfund Program National Priority List since 2007. The Comprehensive Environmental Response, Compensation, and Liability Information System Identification Number for the Halaco site is CAD009688052.

ACTION LEVELS

Radiological action levels for surface contamination were established utilizing the guidance outlined in the U.S. Department of Energy (DOE) Order 5400.5, Radiation Protection of the Public and Environment, Change 2, dated January 7, 1993 which were clarified and amended in the DOE memorandum: Application of DOE 5400.5 requirements for release and control of property containing residual radioactive material, November 17, 1995 from Air, Water, and Radiation Division, EH-412. The Surface Activity Guidelines, Allowable Total Residual Surface Activity, are established in disintegrations per minute per 100 square centimeters (dpm/ 100 cm²). As used in this table, dpm means the rate of emission by radioactive material as determined by correcting the counts per minute observed by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation. Static surface radiological

measurements were compared to the average and maximum acceptable surface contamination levels, and radiological dust wipe sample results were compared to the removable acceptable surface contamination level.

DOE Order 5400.5 Acceptable Surface Contamination Levels									
Radionuclide ¹	Average ^{2,3}	Maximum ⁴	Removable ⁵						
Thorium-228, Thorium-230	100 dpm/100 cm ²	$300 \text{ dpm}/100 \text{ cm}^2$	$20 \text{ dpm}/100 \text{ cm}^2$						
Thorium-232	1,000 dpm/100 cm ²	3,000 dpm/100 cm ²	200 dpm/100 cm ²						
Beta-gamma emitters (Cesium-137 and Potassium- 40)	5,000 dpm/100 cm ²	15,000 dpm/100 cm ²	1,000 dpm/100 cm ²						

Notes:

- 1 = Where surface contamination by both alpha- and beta-gamma-emitting radionuclides exists, the limits established for alpha- and beta-gamma-emitting radionuclides should apply independently.
- 2 = Measurements of average contamination should not be averaged over an area of more than 1 m^2 .
- 3 = The average and maximum dose rates associated with surface contamination resulting from beta-gamma emitters should not exceed 0.2 mrad/h and 1.0 mrad/h, respectively, at 1 cm.
- 4 = The maximum contamination level applies to an area of not more than 100 cm².
- 5 = The amount of removable material per 100 cm2 of surface area should be determined by wiping an area of that size with dry filter or soft absorbent paper, applying moderate pressure, and measuring the amount of the radioactive material on the wiping with an appropriate instrument of known efficiency.

Action levels for metals, volatile organic compounds (VOCs), and total petroleum hydrocarbons as diesel (TPH-d) in solid samples were based on the U.S. EPA Region IX Regional Screening Levels for Industrial Soil (iRSL) published in April 2009. Action levels for solids analyzed by alpha and gamma spectroscopy were based on the U.S. EPA Preliminary Remediation Goals for Radionuclides in residential soil (rPRG) published in February 2002.

Action levels for metals in dust wipes were based on the laboratory reporting limits to determine the presence or absence of each California Title 22 metal. The presence of metals from the dust samples were also compared to the solid sample metal results to better understand if state or federal hazardous waste existed.

U.S. EPA AND START ASSESSMENT ACTIVITIES

On September 21, 2009, the START participated in a site reconnaissance with FOSCs Robert Wise and Chris Weden and a response manager from the U.S. EPA Emergency and Rapid Removal Services contractor (ERRS). The U.S. EPA also held a site information meeting with representatives from the City of Oxnard Fire Department Certified Unified Program Agency, City of Oxnard Building and Engineering Services, and the City of Oxnard Water Resources Department during the reconnaissance visit. Between October 21 and 23, 2009, the START conducted an assessment of building substrates at Halaco with FOSC Chris Weden and a ERRS response manager. The assessment focused on the investigation of two structures located on the property. The START collected photographic documentation of site conditions and site activities during the two site visits (Attachment B). Prior to the beginning of site operations, the START prepared a site-specific Health and Safety Plan (HASP) in accordance with the requirements

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pursuant to 29 Code of Federal Regulations (CFR) part 1910.120(b)(4). A copy of the HASP is included in the START project file.

The START prepared an *Emergency Response and Time Critical Quality Assurance Sampling Plan for Soil, Water, and Miscellaneous Matrix Sampling* (ER-QASP) to outline the procedures required to collect static radiological surface measurements, surface dust wipe samples, and surface solid samples (Attachment C). The data use objectives described in the ER-QASP were:

- To assist in determining the presence or absence of a hazardous material or substance at levels above an available detection or quantification limit.
- To be compared with site-specific action levels or risk-based action levels to assist in determination if health threats exist.

Throughout the smelter and baghouse buildings judgmental sampling locations were identified, which took into consideration the various substrates and building materials present in the two structures. The judgmental sample locations were selected at various heights throughout each structure, including the building roofs and ceiling rafters.

Radiological instrumentation used during the assessment were evaluated under a quality control (QC) program to document that detectors were within annual calibration, and were operating within daily QC parameters. Daily QC checks were performed at the beginning of the day before starting field work, and at the end of the day prior to leaving the field. Calibration sheets and annual calibration certificates are located in the START project file. Background radiation measurements were taken from an area to the west of the smelter building believed to be free of radiation contamination. Background alpha and beta measurements were obtained utilizing the instruments used during the investigation. Background readings were obtained for each type of substrate/building material for each instrument used in the investigation. Attachment D, Table 1 summarizes the background radiological measurements.

The U.S. EPA, START, and ERRS organized into two teams and collected the following samples during the assessment:

- 72 radiation surface measurements and wipe samples and 7 field duplicates for assessment of alpha and beta contamination
- 17 dust wipe samples, 2 dust wipe duplicates, and 2 dust wipe blanks for assessment of metals contamination
- 9 solid samples and 1 field duplicate for assessment of metals, volatile organic compounds (VOCs), total petroleum hydrocarbons as diesel and motor oil (TPH-d), and alpha and gamma spectroscopy analysis

All sampling was conducted in accordance with the ER-QASP and applicable Standard Operating Procedures (without exceptions) or (with the following exceptions):

The sample teams collected radiation surface measurements and/or radiation surface wipe samples at 72 locations throughout the smelter and baghouse buildings. In the smelter building, 54 locations and five field duplicate locations were sampled. In the baghouse building, 18

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locations and two field duplicate locations were sampled (Attachment A, Figures 5 and 6). At each sampling location a static radiological surface measurement was taken along with a radiological wipe sample. Static radiological surface measurements were utilized to determine average and maximum surface alpha and beta radiological contamination. The sample teams utilized the following instruments to obtain the static radiological surface measurements:

- Team 1: Ludlum Model 2241-3 ratemeter/scaler with a Ludlum Model 43-90 alpha scintillator detector and a Ludlum Model 2221 ratemeter/scaler with a Ludlum Model 44-116 beta scintillator detector.
- Team 2: Ludlum Model 2360 ratemeter/scaler with a Ludlum Model 43-93 alpha and beta scintillator detector.

Attachment D, Table 2 summarizes the static radiation surface measurements obtained by the sample teams. Static surface measurements were obtained utilizing the Ludlum instruments identified earlier in this report. The detectors were placed on contact with the sampling surface to collect a one minute scaler count in counts per minute (cpm) from a 100 cm² area. The following equation was utilized to convert cpm to dpm for comparison to the DOE Order 5400.5 Acceptable Surface Contamination Levels:

dpm =
$$\frac{\text{surface result in cpm - background result in cpm}}{\text{instrument efficiency x surface efficiency}}$$

Radiological wipe samples were collected following the U.S. EPA Environmental Response Team (ERT) Standard Operation Procedure (SOP) No. 2011 for Chip, Wipe and Sweep Sampling. The radiological wipe samples were analyzed in the field for removable alpha and beta radiation contamination utilizing a Ludlum Model 3030 alpha and beta sample counter to obtain results in dpm. Attachment D, Table 3 summarizes the radiological wipe sample results.

Dust wipe samples were collected at judgmental sample locations throughout the smelter and baghouse buildings following U.S. EPA SOP No. 2011. A total of 21 dust wipe samples were collected. Ten samples were collected from the smelter building, seven samples were collected from the baghouse building, and two duplicates and two field blanks were collected (Attachment A, Figures 5 and 6). The dust wipe samples were shipped to an off-site analytical laboratory for analysis of metals by EPA SW-846 Method 6010B. Attachment D, Table 4 summarizes the dust wipe sample results.

Solid samples were collected from judgmental sample locations during the building assessment (Attachment A, Figure 7). Solid samples were collected of the material/soil from the building floors, vaults, duct work, and furnaces utilizing a dedicated disposable sampling scoop. Each sample was homogenized in a plastic bag, transferred into glass jars for shipment to an on-site analytical laboratory, labeled and custody sealed. Composite samples were taken of the material from the floor of each building, the material in a containment sub-floor vault from each building, the material in the smelter furnaces located in the smelter building, and from the baghouse structure south of the baghouse building. Grab samples were taken from the duct work inside the smelter building, from solid material located on the top of the control room in the smelter building and from the smelter furnace located in the west room of the smelter building. Solid samples were shipped to an off-site analytical laboratory for metals analysis by EPA SW-846

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Method 6010B, VOCs by EPA SW-846 Method 8260B, TPH-d by EPA SW-846 Method 8015M, alpha spectrometry by DOE Environmental Measurements Laboratory (EML) Procedures Manual (HASL 300), Th-01-RC Modified, and gamma spectrometry by DOE HASL 300, 4.5.2.3/Ga-01-R. Attachment D, Table 5 summarizes the solid samples results.

All dust wipe and solid samples were submitted to GEL Laboratories, LLC in Charleston, South Carolina, on October 26, 2009, under a START subcontract mechanism using appropriate chain-of-custody procedures. The data were validated in accordance with qualification guidelines stated in the START 3 Procedures for Tier 2 Data Validation of U.S. EPA ERS data, presented in the START Quality Assurance Project Plan, validated laboratory results are presented in Attachment E. This procedure follows guidelines derived from the U.S. EPA Region IX Superfund Data Evaluation/Validation Guidance R9QA/006.1; EPA CLP National Functional Guidelines for Superfund Organic Data Review, (EPA 540/R-08-01, 2008); EPA CLP National Functional Guidelines for Inorganic Data Review (EPA 540-R-04-004, 2004); and Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan. All data was found to be acceptable for the project data use objectives.

DISCUSSION OF ANALYTICAL RESULTS

Static surface radiological measurements were compared to the DOE Order 5400.5 Acceptable Surface Contamination Levels for maximum and average radiological contamination. No alpha or beta maximum surface contamination action levels were exceeded; therefore, no additional radiological surveys were required to determine if the average surface contamination levels would be exceeded. Radiological wipe sample were compared to the DOE Order 5400.5 Acceptable Surface Contamination Levels for removable radiological contamination. No alpha or beta results from the radiological wipe samples exceeded the action level for removable surface contamination. Dust wipe samples indicated the presence of all the California Title 22 metals throughout both structures; however, solid samples taken from the floor of each building indicated that no California Title 22 metals exceeded the California Total Threshold Limit Concentration (TTLC) for a state hazardous waste. Arsenic was found above the iRSL at all solid sample locations. Solid samples from the smelter building floor, sub-floor vault and from all furnaces exceed soil rPRGs for potassium-40. Baghouse building solid samples from the building floor, sub-floor vault, and baghouse solids also exceeded the potassium-40 rPRG for soil. Solid samples from the baghouse building sub-floor vault also indicated radium-228 above the rPRG for soil.

A limited number of laboratory analytical results were qualified as estimated based on field duplicate relative percent difference (RPD). Duplicate dust wipe and solid matrix samples were collected as part of this project and met the collection frequency criteria stated in the ER-QASP. Field duplicates generally are a measure of total error (precision) related to sample heterogeneity, methodology, and analytical procedures. Based on the document referenced above, National Functional Guidelines for Inorganic Data Review, there are no official acceptance criteria for the RPD related to field duplicate samples. The ER-QASP indicates that for dust wipe and soil samples acceptable duplicate RPDs are less than 35 percent. All RPD calculations and explanations are presented in the data validation reports (Attachment E).

SUMMARY AND CONCLUSION

The START was tasked by FOSC Robert Wise to conduct a removal assessment of two dilapidated structures on the Halaco site to determine the presence of hazardous waste to aid in building demolition planning. Direct radiological measurements, radiological wipe samples, dust wipe samples, and solid samples were collected by the START during the assessment. Based on the radiological static surface measurements and wipe samples, no radiological contamination above the DOE published acceptable maximum, average, and removable surface contamination is present inside the two buildings at the sample locations. Dust wipe sample indicated the presence of California Title 22 metals, but solid samples taken from each buildings floor did not indicate that state or federal hazardous waste criteria were exceeded. Arsenic was present above the iRSL at all locations sample for solids. Potassium-40 was present above the rPRG at four smelter building and three baghouse building locations. Radium-228 was also present above the rPRG in the baghouse building sub-floor vault.

This report concludes all activities conducted by the START with regards to the Halaco Building Assessment. If you have any questions regarding START activities associated with the project, please do not hesitate to contact me.

Respectfully submitted,

Daniel Haag

START Project Manager

Attachment A: Figures:

Figure 1 – Site Vicinity Map

Figure 2 – Site Features Map

Figure 3 – Smelter Building Features

Figure 4 – Baghouse Building Features

Figure 5 – Smelter Building Sample Locations

Figure 6 – Baghouse Building Sample Locations

Figure 7 – Solid Sample Locations

Attachment B: Photo Documentation

Attachment C: Emergency Response and Time Critical Quality Assurance Sampling Plan

Attachment D: Tables

Table 1 – Summary of Background Radiation Results

Table 2 – Summary of Static Radiological Measurements

Table 3 – Summary of Radiological Wipe Samples

Table 4 – Summary of Dust Wipe Sample Results

Table 5 – Summary of Solid Sample Results

Attachment E: Validated Data Reports

cc: Electronic Deliverable System 2

START Project File







Figure 1
Site Vicinity Map
Halaco Building Assessment
6200 Perkins Road, Oxnard, Ventura County, California



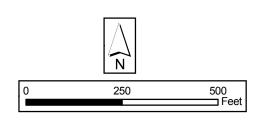


Figure 2
Site Features
Halaco Building Assessment
6200 Perkins Road, Oxnard,
Ventura County, California





LEGEND

SME-D-### = Direct Radiological Surface Measurement

ζz

20

- SME-W-### = Radiological Wipe Sample
- SME-M-### = Metals Dust Wipe Sample ×

Halaco Building Assessment 6200 Perkins Road, Oxnard, Ventura County, California Sample Locations Figure 5 Smelter Building





LEGEND

- SME-D-### = Direct Radiological Surface Measurement
- SME-W-### = Radiological Wipe Sample
- SME-M-### = Metals Dust Wipe Sample

X

22

Halaco Building Assessment 6200 Perkins Road, Oxnard, Ventura County, California **Baghouse Building** Sample Locations Figure 6







ATTACHMENT B: PHOTO DOCUMENTATION

ECOLOGY AND ENVIRONMENT, INC.

Superfund Technical Assessment and Response Team

Halaco Building Assessment, Oxnard, Ventura County, California

E&E Project. No.: 002693.2053.01RA



TDD No: TO2-09-09-0002 Contract No. EP-S5-08-01

<u>PHOTO 1</u>

Date: 09/29/2009

Direction: Southeast

Photographer: Dan Haag

Description: View facing southeast of Smelter

Building.



PHOTO 2

Date: 09/29/2009

Direction: Southwest

Photographer: Dan Haag

Description: View facing southwest of

Baghouse Building.



PHOTO 3

Date: 09/29/2009

Direction: East

Photographer: Dan Haag

Description: View facing east inside Smelter

Building.

ECOLOGY AND ENVIRONMENT, INC.

Superfund Technical Assessment and Response Team

Halaco Building Assessment, Oxnard, Ventura County, California

E&E Project. No.: 002693.2053.01RA TDD No: TO2-09-09-09-0002 Contract No. EP-S5-08-01



PHOTO 4

Date: 10/21/2009

Direction: East

Photographer: Dan Haag

Description: U.S. EPA ERRS contractor cutting access ports into baghouse duct work

for sample collection.



<u>PHOTO 5</u>

Date: 10/22/2009

Direction: Northwest

Photographer: Dan Haag

Description: U.S. EPA collecting sample

inside Smelter Building.

ECOLOGY AND ENVIRONMENT, INC.

Superfund Technical Assessment and Response Team

Halaco Building Assessment, Oxnard, Ventura County, California

E&E Project. No.: 002693.2053.01RA

TDD No: TO2-09-09-09-0002 Contract No. EP-S5-08-01



Date: 09/29/2009

Direction: South

Photographer: Dan Haag

Description: View of kiln/furnace inside

Smelter building.



PHOTO 7

Date: 10/23/2009

Direction: South

Photographer: Dan Haag

Description: View facing south inside Smelter Building. Pink dots indicate sample location.





ATTACHMENT C: EMERGENCY RESPONSE AND TIME CRITICAL QUALITY ASSURANCE SAMPLING PLAN

EPA Emergency Response Section (ERS) And Superfund Technical Assessment and Response Team (START)

Emergency Response and Time Critical Quality Assurance Sampling Plan For

Soil, Water and Miscellaneous Matrix Sampling

Response Location: Halaco Engineering Company 6200 Perkins Road, Oxnard, CA (Site Name and TDD#): Halaco Building Assessment / TDD No.: T02-09-09-09-0002

Date: October 16, 2009

Prepared by: Dan Hang

954

Reviewed by: Howard Edwards

Approved by: Robert Wise / Chris Weden

This sampling plan was prepared and delivered to the EPA OSC (select one):

Prior to Sampling | X | Post Sampling (within one month of sampling)

This emergency sampling plan is intended to be used in conjunction with the EPA's Region 9 Emergency Response Section's Generic Data Quality Objectives (DQOs) for Emergency Responses and Time Critical Evaluations. This sampling plan has been designed to assist field responders in their preparation for collecting, analyzing, shipping, storing and handling samples collected during an emergency response. The use of this generic sampling plan will involve forethought and planning that should help direct the sampling and analytical work. It is meant to be used in the case of emergency responses or time-critical responses when sampling teams may not have the opportunity to write a more thorough sampling plan. Sampling teams should always reference standard quality procedures, standard operations procedures, standard methods for sampling and analytical guidance.

The development of this generic plan will improve the documentation, communication, planning, and overall quality associated with the sampling and analysis by:

- 1) encouraging field teams to consider their goals and objectives before the generation of environmental data,
- documenting predetermined information in a standardize format,
- 3) increasing the communication between sampling personnel and decision makers, and
- 4) detailing expectations and objective before samples are collected.

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1.0 Introduction and Background. Describe the site and specify the geographic boundaries for the site and any specific areas of concern. What is the problem, what precipitated the response, which agencies and other entities (e.g., contractors) are on site, who has taken the lead for the response and for environmental clean-up actions?

The Halaco Engineering Company (Halaco) is located at 6200 Perkins Road in Oxnard, Ventura County, California. Metal recycling operations were conducted on the property between 1965 and 2004. Scrap metal, including low level radioactive material, was processed at the Halaco facility. The site is divided into two distinct areas: the main processing area and the waste disposal area, which are separated by the Oxnard Industrial Drain (OID). The site is adjacent to the Ormond Beach wetlands, Ormond Beach Lagoon, and Ormond Beach to the west and south. The site is bordered to the east by wetlands owned by the Nature Conservancy and to the north by industrial property.

In 2006-2007, the EPA conducted operations to stabilize and secure the site and limit offsite migration of contaminated wastes including removal of drums and containers of hazardous materials, consolidation of process waste solids, and re-grading of the waste pile located in the waste disposal area. Contamination found at the facility during this operations included aluminum, arsenic, barium, beryllium, cadmium, chromium, copper, magnesium, manganese, nickel, silver, zinc, cesium-137, potassium-40, thorium-228, thorium-230, and thorium-232.

Two dilapidated buildings remain on the main processing area of the Halaco site: a smelter building and a baghouse building. These two buildings are the focus of this investigation.

2.0 Objectives. Brief statement on the general project objective. What is the overall goal or objective? Specific objectives are summarized in Table D.

Determine the presence/absence of radioactive surface contamination (total, fixed, and removable) and heavy metal (CAM 17 metals) contamination found throughout the Smelter and Baghouse Buildings located at the Halaco Facility to aid in preparation of building demolition planning.

Collect wipe samples from the Smelter and Baghouse Buildings and analyze for alpha and beta radiation (maximum and removable) and heavy metals (CAM 17).

Collect solid samples from the floors, vaults, and ducting of the Smelter and Baghouse Buildings and analyze for heavy metals (CAM 17). VOCs, TPH (oil), and radiation.

2.1	Data U	Use Objectives. (How will the data be used?)
Data t	hat are g	generated will be used: (Select Appropriate Boxes)
1		To be compared with a background or reference sample(s).
2		To be compared with an available detection or quantification level.
3	X	To assist in determining the presence or absence of a hazardous material or substance at levels above an available detection or quantification level.
4		To assist with determining the area of impact due to a hazardous material release. (i.e., horizontal and lateral extent).
5	X	To be compared with site-specific action levels or risk-based action levels (e.g., EPA PRGs) to assist in determination if health threats exist.
6		As definitive confirmatory data for confirmation of non-definitive (screening) data.
7		Other objectives:
2.2	Sampl	ing Objectives. (What are you proposing to do?)
1	X	Sampling to determine only the presence or absence of a hazardous substance within the area of concern.
2	X	Sampling to estimate:
		☑ contamination levels within the area of concern.
		□ contamination area(s) within a site.
3		Sampling to determine the location of hot spots within the area of concern
4		Surface soil sampling to estimate the lateral extent of contamination
		□ of specific source area(s) or areas of concern
		□ over entire site
5		Sub-surface sampling to estimate the vertical extent of contamination
		□ of specific source area(s) or areas of concern
		□ over entire site.
6		Sampling off site to determine:
2.3	Sampl	e Matrices
1	X	Surface soils (solid samples collected from buildings' floors, vaults, and ducting)
2		Subsurface soil Depth(s):

Revised: March 15, 2005 - 3

3		Surface water
4		Groundwater Depth(s):
5		Other aqueous matrices Please specify:
6	X	Wipe samples
7		Biota Please specify:
8	\boxtimes	Other matrices: Radiological static and scanning surface measurements.

Please note: Please use other QASPs for air and containerized samples.

2.4 Data Type

In general, data type and data needs should be decided prior to data generation. The data can be generally divided into three categories: definitive methodology data (generally data generated using standardize methods), non-definitive methodology data (also referred to as screening data) and screening data with at least 10% definitive conformation. The generation of definitive data is preferable, however in emergency and time critical situations where definitive data is not available, non-definitive data should be generated. Note that the data type is not an indicator of precision, accuracy or documentation completeness, or quality! Reported data should be verified (by a party other than the laboratory) as meeting specific quality control and data category requirements by following a verification or validation procedure. Refer to the START or ERS Quality Assurance Plans for specific quality parameters and requirements.

Check appropriate box(es):

- Screening data will be generated. The data by itself may not be verifiable. **Due to the** time critical situation, the data must be reported and may be used to make decisions. (Radiation Data)
- Screening data with at least 10 percent definitive data will be generated. Data using non-definitive analytical methodologies will be generated. Due to the time critical situation, the data must be reported and may be used to make decisions prior to generation of definitive data. The screening data by itself may not be verifiable. Screening data will be evaluated and reported with definitive data at a later time. (Metals, VOCs, and TPH Data)

2.5 Contaminants of Concern

Potential contaminants of potential concern (COPC), proposed analytical method, proposed action levels and available reporting limit are summarized in Table A.

Table A							
		Contamina	nts of Concerr	1			
Potential COC	Proposed Analytical Method	Proposed Action Level			Proposed Action Level Available Reporting Limit		
CAM 17 Metal (Wipe and Solid Samples)	EPA 6010B	Wipe (ug/filter)	Solid (TTLC) (mg/kg)	Solid (iRSL) (mg/kg)	Wipe (ug/filter)	Solid (mg/kg)	
Antimony	EPA 6010B	0.5	500	410	0.5	1	
Arsenic	EPA 6010B	1.5	500	1.6	1.5	3	
Barium	EPA 6010B	0.25	10,000	190,000	0.25	0.5	
Beryllium	EPA 6010B	0.25	75	2,000	0.25	0.5	
Cadmium	EPA 6010B	0.25	100	800	0.25	0.5	
Chromium	EPA 6010B	0.25	2,500	1,400	0.25	0.5	
Cobalt	EPA 6010B	0.25 8,000 300		0.25	0.5		
Copper	EPA 6010B	0.5 2,500 41,000		0.5	1		
Lead	EPA 6010B	0.5 1,000 800		0.5	1		
Molybdenum	EPA 6010B	0.5			0.5	1	
Nickel	EPA 6010B	0.25	2,000	20,000	0.25	0.5	
Selenium	EPA 6010B	1.5	100	5,100	1.5	3	
Silver	EPA 6010B	0.25	500	5,100	0.25	0.5	
Thallium	EPA 6010B	1	700	66	1	2	
Vanadium	EPA 6010B	0.25	2,400	5,200	0.25	0.5	
Zinc	EPA 6010B	0.5	5,000	310,000	0.5	1	
TPH (Solid Samples)	EPA 8015M				6.66 mg/kg		
VOCs (Solid Samples)	EPA 8260B		iDCI a (ma/ka)			ma/lsa	
VOCs (Solid Samples)			iRSLs (mg/kg)	1		ng/kg	
1,1,1-Trichloroethane	EPA 8260B		39,000		Ì	0.001	
1,1,2,2-Tetrachloroethane	EPA 8260B		2.9			0.001	
1,1,2-Trichloroethane	EPA 8260B		5.5			0.001	
1,1,-Dichloroethane	EPA 8260B		17			0.001	
1,1,-Dichloroethylene	EPA 8260B		1,100			0.001	
1,2-Dichloromethane	EPA 8260B		na 4.7			0.001	
1,2-Dichloropropane	EPA 8260B		4.7		ĺ	0.001	
2-Butanone	EPA 8260B	190,000			0.005		

Table A (continued) Contaminants of Concern							
Potential COC	Proposed Analytical Method	Proposed Action Level	Available Reporting Limit				
2-Hexanone	EPA 8260B	na	0.005				
4-Methyl-2-pentanone	EPA 8260B	52,000	0.005				
Acetone	EPA 8260B	610,000	0.005				
Benzene	EPA 8260B	5.6	0.001				
Bromdichloromethane	EPA 8260B	1.4	0.001				
Bromodichloroform	EPA 8260B	na	0.001				
Bromoform	EPA 8260B	220	0.005				
Bromomethane	EPA 8260B	35	0.001				
Carbon disulfide	EPA 8260B	3,000	0.005				
Carbon tetrachloride	EPA 8260B	1.3	0.001				
Chlorobenzene	EPA 8260B	1,500	0.001				
Chloroethane	EPA 8260B	na	0.001				
Chloroform	EPA 8260B	1.5	0.001				
Chloromethane	EPA 8260B	510	0.001				
cis-1,2-Dichloroethylene	EPA 8260B	10,000	0.001				
cis-1,3-Dichloropropylene	EPA 8260B	na	0.001				
Dibromochloromethane	EPA 8260B	3.4	0.001				
Ethylbenzene	EPA 8260B	29	0.001				
Methylene chloride	EPA 8260B	54	0.005				
Styrene	EPA 8260B	38,000	0.001				
tert-Butyl methyl ether	EPA 8260B	190	0.001				
Tetrachloroethylene	EPA 8260B	2.7	0.001				
Toluene	EPA 8260B	46,000	0.001				
trans-1,2-Dichloroethylene	EPA 8260B	500	0.001				
trans-1,2- Dichloropropylene	EPA 8260B	na	0.001				
Trichloroethylene	EPA 8260B	14	0.001				
Vinyl acetate	EPA 8260B	4,200	0.005				
Vinyl chloride	EPA 8260B	1.7	0.001				
Xylenes (total)	EPA 8260B	2,600	0.001				
TIL : 220	HAGI 200		1 01/				
Thorium-228	HASL-300		1 pCi/g				
Thorium-230	HASL-300		1 pCi/g				
Thorium-232	HASL-300		1 pCi/g				
Cesium-137	HASL-300		0.1 pCi/g				

Table A (continued) Contaminants of Concern						
Potential COC	Proposed Analytical Method	Proposed Action Level	Available Reporting Limit			
Potassium-40	HASL-300					
Thorium-228, Thorium -230	Ludlum direct read instruments and Model 3030 alpha/beta counter	Average ^(a) : 100 dpm /100 cm ² Maximum ^(b) : 300 dpm /100 cm ² Removable: 20 dpm / 100 cm ²				
Thorium-232	Ludlum direct read instruments and Model 3030 alpha/beta counter	Average ^(a) : 1,000 dpm /100 cm ² Maximum ^(b) : 3,000 dpm / 100 cm ² Removable: 200 dpm / 100 cm ²				
Beta-gamma radiation emitting radionuclides (total, fixed, removable), including cesium-137 and potassium-40	Ludlum direct read instruments and Model 3030 alpha/beta counter	Average ^(a) : 5,000 dpm /100 cm ² Maximum ^(b) : 15,000 dpm / 100 cm ² Removable: 1,000 dpm / 100 cm ²				
Other Data Collection Activity (non chemical) (bold all that apply)	GPS Other Geophys	Visual Interviews sical Modeling Photograph	Magnetometer hy File Search			

⁽a): Measurements of average contaminant should not be averaged over more than 1 square meter.

3.0 Approach and Sampling Methodologies

3.1 Sampling Approach

Indicate sampling approaches to be used (select approach)

⁽b) The maximum contamination level applies to an area of not more than 100 cm².

1		Due to the lack of site information the approach will be determined in the field based on professional judgment of START.
2		Due to the lack of site information the approach will be determined in the field based on professional judgment of US EPA.
3		Due to the lack of site information the approach will be determined in the field based on professional judgment of local regulator.
4	X	Judgmental (Biased) (for solid and wipe samples to be analyzed for metals)
5		Random
6		Systematic
7		Transects
8		Search-Grid (for radiological wipe sampling)
If a <u>se</u> :	arch-gri	d, specify grid type (circle one): Square Triangle Rectangle
	Size o	f contamination hot-spot to be detected:
	Shape	of hot-spot (circle one): Circle Elliptical Elongated-Elliptical
	Requi	red Grid Spacing:
	Accep	table probability of missing hot-spot (circle one): 5 % 10 % 20% 40%

ERS/START

Emergency and Time Critical QASP Soil, Water and Miscellaneous Matrix

3.2 Field Analysis Equipment
Field analysis equipment requirements are summarized in Table B1.

	Table B1 Field Analytical Equipment	ipment		
Analysis Equipment Specify the field analytical procedures to be used. Select the appropriate boxes.	Model	Analyses	Matrix	Resource/Contractor
☐ X-Ray Fluorescence (XRF) Device [for metals]				
☐ Lumex (XRF) Mercury Instrument				
□ Oil Analysis Kit [for oils]				
☐ Immunoassay Test Kits [pesticides, oils, chlorinated substances]				
	Ludlum 2241-2 or 2241-3 with Ludlum 43-90 or 43-93	Alpha radiation	Direct surface measurement	EPA-owned
	Ludlum 2241-2 or 2241-3 with Ludlum 44-116 or 43-93	Beta radiation	Direct surface measurement	EPA-owned
🗵 Radiation Meter	Ludlum 3030	Alpha/beta radiation	Wipe	EPA-owned

3.3 Field Sampling Equipment

Field equipment requirements are summarized in Table B2.

Table B2 Field Sampling and Decontamination Equipment								
Analyses and Matrix	Sampling Equipment	Dedicated or Reusable	Decontamination Solution	Resource/ Contractor				
Metals Wipe Sample	Ghost Wipes	Dedicated	NA	START				
Alpha/Beta Radiation Wipe Sample	Whatman 47 mm Filter Paper	Dedicated	NA	START				
Metals, VOCs, TPH (oil), and Alpha and Gamma Spectroscopy Solid Sample	Plastic Sample scoop	Dedicated	NA	START				

3.4 Field Methods and Procedures

3.4.1 Sample Locations. Indicate the sampling location name, describe location, and indicate rationale for each sample location chosen.

SME-D-001 – 054 / Biased direct measurements in Smelter Building.

BAG-D-001 – 018 / Biased direct measurements in Baghouse Building.

SME-W-001 - 054 / Biased radiation wipe samples in Smelter Building.

BAG-W-001 – 018 / Biased radiation wipe samples from Baghouse Building.

SME-M-001 – XXX / Biased metal wipe samples in Smelter Building.

BAG-M-001 – XXX / Biased metal wipe samples in Baghouse Building.

SME-S-001 – 006 / Biased solid samples from Smelter Building.

BAG-S-001 – 003 / Biased solid samples from Baghouse Building.

Sketch a map of the site and any areas of concern. Indicate sampling locations or sampling areas in Figure A and included names. Use a scale that is meaningful for the sampling work covered under this plan. Sketch out where the samples will be collected and include sampling location names. Attach a local map to this plan if it is available.

Figure A Sample Location Map

Biased sample locations TBD.

3.4.2 Sample Labeling and Documentation

Sample Jar Labels

Sample labels will clearly identify the particular sample and should include the following:

- 1. Site name
- 2. Time and date samples were taken
- 3. Sample preservation
- 4. Analysis requested
- 5. Sample location and/or identification number

Sample labels will be securely affixed to the sample container.

Chain of Custody Record

A chain of custody record will be maintained from the time the sample is taken to its final deposition. Every transfer of custody must be noted and signed for, and a copy of this record kept by each individual who has signed. When samples (or groups of samples) are not under direct control of the individual responsible for them, they must be stored in a secured container sealed with a custody seal.

The chain of custody record should include (at minimum) the following:

- 1. Sample identification number
- 2. Sample information
- 3. Sample location
- 4. Sample date and time
- 5. Names(s) and signature(s) of sampler(s)
- 6. Signature(s) of any individual(s) with control over samples

Custody Seals

Custody seals demonstrate that a sample container has not been tampered with or opened. The individual in possession of the sample(s) will sign and date the seal, affixing it in such a manner that the container cannot be opened without breaking the seal. The name of this individual, along with a description of the samples= packaging, should be noted in the field book.

All sample documents will be completed legibly in ink. Any corrections or revisions will be made by lining through the incorrect entry and by initialing the error. These include the logbooks, the chain of custody forms, this field QASP and any other tracking forms.

Field Logbook

The field logbook is essentially a descriptive notebook detailing site activities and observations so that an accurate account of field procedures can be reconstructed in the writer's absence. All entries will be dated and signed by the individuals making the entries and will include the following:

- 1. Site name and project number
- 2. Names of sampling personnel
- 3. Dates and times of all entries (military time preferred)
- 4. Descriptions of all site activities, especially sampling start and ending times. Include site entry and exit times

- 5. Noteworthy events and discussions
- 6. Weather conditions
- 7. Site observations
- 8. Identification and description of samples and locations
- 9. Subcontractor information and names of on-site personnel
- 10. Date and time of sample collections, along with chain of custody information
- 11. Record of photographs
- 12. Site sketches
- 13. Exact times of various activities and occurrences related to sampling
- 14. Deviations from standard procedures or methods and the rational for the deviations.

3.4.3 Sample Containers and Preservatives

Containers and preservatives are summarized in Table C.

Table C Containers and Preservatives									
Analyses and Matrix	Container Type (per sample)	Preservation Method	Holding Time						
Metals (6010B) / Wipe	Poly vial	None	6 months						
Metals (6010B) / Solid	4 oz glass jar	None	6 months						
VOCs (8260) and TPH (8015M) / Solid	4 oz glass jar	None	6 months						
Radiation (HASL 300, 901/1M) / Solid	16 oz glass jar	None	6 months						
Alpha/beta radiation / Wipe	Envelope	None	None						

3.5 Analytical Methods and Procedures

The analytical methods per sample and sample location are presented in Table D. General field QC considerations and requirements are presented in Table E.

Emergency and Time Critical QASP Soil, Water and Miscellaneous Matrix

Table D Sample Locations and Data Objective Summary Sampling Locations and Identifiers should correspond to location indicated on Figure A	rrespond to location indicated on Figure A	Data Use Objective(s) Refer to Section 2.1 Refer to Section 2.4 Refer to Section 2.4 Refer to Section 2.4	ation 2.1.3 2.4.1 Direct surface measurement	ation 2.1.3 2.4.1 Wipe	2.1.3 2.4.2a Wipe	i015M, 2.1.3 2.4.2a Solid	ation 2.1.3 2.4.1 Direct surface measurement	ation 2.1.3 2.4.1 Wipe	2.1.3 2.4.2a Wipe	i015M, 2.1.3 2.4.2a Solid
	should correspond to location indicated on F	Data Use Objective(s) Refer to Section 2.1	2.1.3	2.1.3		EPA 8015M, 2.1.3	2.1.3	2.1.3		EPA 8015M, 2.1.3
	pling Locations and Identifiers	Sample Analytical Method Identifiers Refer to Table A	SME-D-XXX Radiological surface contamination (total, fixed, removable)	SME-W-XXX Radiological surface contamination (total, fixed, removable	SME-M-XXX EPA 6010B	SME-S-XXX EPA 6010B, EPA 8260, HASL 300, EPA 901.1M	BAG-D-XXX Radiological surface contamination (total, fixed, removable)	BAG-W-XXX Radiological surface contamination (total, fixed, removable	BAG-M-XXX EPA 6010B	BAG-S-XXX EPA 6010B, EPA 8260, HASL 300, EPA 901.1M
	Sam	Sample Location(s) (should match with 3.3.1 and Figure A)	Smelter Building SM	Smelter Building SM	Smelter Building SM	Smelter Building SM	Baghouse Building BA(Baghouse Building BA(Baghouse Building BA(Baghouse Building BA(

Quality Assurance and Quality Control 3.6

General field QA/QC considerations and requirements are presented in Table E.

Table E Quality Control Samples and Data Quality Indicator Goals								
QC Sample	Number/Frequency	Data Quality Indicator Goals & Evaluation Criteria	Comments/Exceptions Site specific remarks:					
	FIELD SPECIA	FIED QA/QC						
Background or reference sample	At least one sample should be collected from an area believed to be unaffected by source contamination.	Source samples should be at least 3 times background.	Surface soil: up-slope. Surface water: upstream. Ground water: up-gradient.					
Field Blanks	Source samples should least 3 times the blank		Water only.					
			:Not Required					
		Source samples should be at least 3 times the blank.	Volatile analytes, water only.					
			: Not Required					
Equipment Blanks	1 per SDG, per matrix, per method Source samples she least 3 times the bl.		Only when the use of decontaminated non-dedicated equipment is involved.					
			: 1 wipe blank sample collected per day					
Field Duplicates or Replicates	1 per SDG, per matrix, per method Water - 25% RPD ² Soil - 35% RPD ²		As needed by sampling objectives. The procedure for collecting duplicate samples can greatly effect the reproducibility.					
		Other - 35%	: 1 co-located (side-by-side field duplicate) sample per every 10 samples collected.					
Performance Standards	1 per project, per matrix, per method	75 -125 %R ³	If available.					
			: Not Available for this matrix					
	SELECTED LABO	RATORY QA/AC						
Method Blank	1 per SDG, per matrix, per method	Stds and samples should be at least 3 times the blank.	Mandatory.					
Matrix Spike	1 per SDG, per matrix, per method on field designated sample.	75 -125 %R	Designate sample on COC.					
Matrix Spike Duplicate or Replicate	1 per SDG, per matrix, per method on field designated sample.	≤50 RPD for organics; ≤20 RPD for metals	Designate sample on COC.					
Reference Standards	1 per SDG, per matrix, per method	75 -125 %R	If available.					
Internal Standards	All samples	50 -200 %R	All GC/MS and some GC analyses only.					
Laboratory Control Standards	1 per SDG, per matrix, per method	75 - 125 %R	Per method for organic analyses.					

SDG = Sample Delivery Group (Maximum 20 samples)
 RPD = Relative Percent Difference
 %R = Percent Recovery

4.0 Project Organization and Responsibilities

4.1 Schedule of Sampling Activities

Sampling activities are summarized in Table F.

Table F Proposed Schedule of Work For Sampling Activities		
Activity	Start Date	End Date
Sample Collection and Field Screening	10/21/09	10/23/09

4.2 Project Laboratories

Laboratories used for this project are summarized in Table G.

Table G Laboratories		
Lab Name/ Location	Methods	
GEL Laboratories, LLC 2040 Savage Road Charleston, SC 29407	EPA 6010B, EPA 8260, EPA 8015M, HASL 300, EPA 901.1M	

4.3 Project Personnel and Responsibilities

Personnel and responsibilities are summarized in Table H.

	ole H n(s) Personnel
Personnel (Agency)	Responsibility
Dan Haag (START)	START Project Manager
Carl Palladino (TPC)	Radiological SME / Sample Collector
Robert Wise (EPA)	FOSC / Sample Collector
Chris Weden (EPA)	FOSC / Sample Collector
Mindy Song (START)	Data Validation
Howard Edwards (START)	START QA

4.4 Modification or Additions to the Generic Data Quality Objective for Emergency and Time Critical Sampling

Project specific modification to the generic DQO statements for this are summarized in Table I. Also indicate which DQO step corresponds to the addition or modification.

Table I DQO Modifications and Additions	
Additions or Modifications to the Generic DQO Output Statements	DQO Step
No significant additions of modifications.	

Revised: March 15, 2005



CHIP, WIPE, AND SWEEP SAMPLING

SOP#: 2011 DATE: 11/16/94 REV. #: 0.0

1.0 SCOPE AND APPLICATION

This standard operating procedure (SOP) outlines the recommended protocol and equipment for collection of representative chip, wipe, and sweep samples to monitor potential surficial contamination.

This method of sampling is appropriate for surfaces contaminated with non-volatile species of analytes (i.e., PCB, PCDD, PCDF, metals, cyanide, etc.) Detection limits are analyte specific. Sample size should be determined based upon the detection limit desired and the amount of sample requested by the analytical laboratory. Typical sample area is one square foot. However, based upon sampling location, the sample size may need modification due to area configuration.

These are standard (i.e., typically applicable) operating procedures which may be varied or changed as required, dependent on site conditions, equipment limitations or limitations imposed by the procedure or other procedure limitations. In all instances, the ultimate procedures employed should be documented and associated with the final report.

Mention of trade names or commercial products does not constitute U.S. EPA endorsement or recommendation for use.

2.0 METHOD SUMMARY

Since surface situations vary widely, no universal sampling method can be recommended. Rather, the method and implements used must be tailored to suit a specific sampling site. The sampling location should be selected based upon the potential for contamination as a result of manufacturing processes or personnel practices.

Chip sampling is appropriate for porous surfaces and is generally accomplished with either a hammer and chisel, or an electric hammer. The sampling device should be laboratory cleaned and wrapped in clean, autoclaved aluminum foil until ready for use. To

collect the sample, a measured and marked off area is chipped both horizontally and vertically to an even depth of 1/8 inch. The sample is then transferred to the proper sample container.

Wipe samples are collected from smooth surfaces to indicate surficial contamination; a sample location is measured and marked off. While wearing a new pair of surgical gloves, a sterile gauze pad is opened, and soaked with solvent. The solvent used is dependent on the surface being sampled. This pad is then stroked firmly over the sample surface, first vertically, then horizontally, to ensure complete coverage. The pad is then transferred to the sample container.

Sweep sampling is an effective method for the collection of dust or residue on porous or non-porous surfaces. To collect such a sample, an appropriate area is measured off. Then, while wearing a new pair of disposable surgical gloves, a dedicated brush is used to sweep material into a dedicated dust pan. The sample is then transferred to the proper sample container.

Samples collected by all three methods are then sent to the laboratory for analysis.

3.0 SAMPLE PRESERVATION, CONTAINERS, HANDLING, AND STORAGE

Samples should be stored out of direct sunlight to reduce photodegredation, cooled to 4°C and shipped to the laboratory performing the analysis. Appropriately sized laboratory cleaned, glass sample jars should be used for sample collection. The amount of sample required will be determined in concert with the analytical laboratory.

4.0 INTERFERENCES AND POTENTIAL PROBLEMS

This method has few significant interferences or problems. Typical problems result from rough porous

surfaces which may be difficult to wipe, chip, or sweep.

5.0 EQUIPMENT

Equipment required for performing chip, wipe, or sweep sampling is as follows:

- C Lab clean sample containers of proper size and composition
- C Site logbook
- C Sample analysis request forms
- C Chain of Custody records
- Custody seals
- C Field data sheets
- C Sample labels
- C Disposable surgical gloves
- C Sterile wrapped gauze pad (3 in. x 3 in.)
- C Appropriate pesticide (HPLC) grade solvent
- C Medium sized laboratory cleaned paint brush
- C Medium sized laboratory cleaned chisel
- C Autoclaved aluminum foil
- C Camera
- C Hexane (pesticide/HPLC grade)
- C Iso-octane
- C Distilled/deionized water

6.0 REAGENTS

Reagents are not required for preservation of chip, wipe or sweep samples. However, reagents will be utilized for decontamination of sampling equipment.

7.0 PROCEDURES

7.1 Preparation

- 1. Determine the extent of the sampling effort, the sampling methods to be employed, and the types and amounts of equipment and supplies needed.
- 2. Obtain necessary sampling and monitoring equipment.
- 3. Decontaminate or preclean equipment, and ensure that it is in working order.
- 4. Prepare scheduling and coordinate with staff, clients, and regulatory agency, if appropriate.
- 5. Perform a general site survey prior to site entry in accordance with the site specific

Health and Safety Plan.

6. Mark all sampling locations. If required the proposed locations may be adjusted based on site access, property boundaries, and surface obstructions.

7.2 Chip Sample Collection

Sampling of porous surfaces is generally accomplished by using a chisel and hammer or electric hammer. The sampling device should be laboratory cleaned or field decontaminated as per the Sampling Equipment Decontamination SOP. It is then wrapped in cleaned, autoclaved aluminum foil. The sampler should remain in this wrapping until it is needed. Each sampling device should be used for only one sample.

- 1. Choose appropriate sampling points; measure off the designated area. Photo documentation is optional.
- 2. Record surface area to be chipped.
- 3. Don a new pair of disposable surgical gloves.
- 4. Open a laboratory-cleaned chisel or equivalent sampling device.
- 5. Chip the sample area horizontally, then vertically to an even depth of approximately 1/8 inch.
- 6. Place the sample in an appropriately prepared sample container with a Teflon lined cap.
- 7. Cap the sample container, attach the label and custody seal, and place in a plastic bag. Record all pertinent data in the site logbook and on field data sheets. Complete the sampling analysis request form and chain of custody record before taking the next sample.
- 8. Store samples out of direct sunlight and cool to 4EC.
- 9. Follow proper decontamination procedures then deliver sample(s) to the laboratory for analysis.

7.3 Wipe Sample Collection

Wipe sampling is accomplished by using a sterile

gauze pad, adding a solvent in which the contaminant is most soluble, then wiping a pre-determined, pre-measured area. The sample is packaged in an amber jar to prevent photodegradation and packed in coolers for shipment to the lab. Each gauze pad is used for only one wipe sample.

- 1. Choose appropriate sampling points; measure off the designated area. Photo documentation is optional.
- 2. Record surface area to be wiped.
- 3. Don a new pair of disposable surgical gloves.
- 4. Open new sterile package of gauze pad.
- 5. Soak the pad with solvent of choice.
- 6. Wipe the marked surface area using firm strokes. Wipe vertically, then horizontally to insure complete surface coverage.
- 7. Place the gauze pad in an appropriately prepared sample container with a Teflonlined cap.
- 8. Cap the sample container, attach the label and custody seal, and place in a plastic bag. Record all pertinent data in the site logbook and on field data sheets. Complete the sampling analysis request form and chain of custody record before taking the next sample.
- 9. Store samples out of direct sunlight and cool to 4°C.
- 10. Follow proper decontamination procedures, then deliver sample(s) to the laboratory for analysis.

7.4 Sweep Sample Collection

Sweep sampling is appropriate for bulk contamination. This procedure utilizes a dedicated, hand held sweeper brush to acquire a sample from a pre-measured area.

- 1. Choose appropriate sampling points; measure off the designated area. Photo documentation is optional.
- 2. Record the surface area to be swept.

- 3. Don new pair of disposable surgical gloves.
- 4. Sweep the measured area using a dedicated brush; collect the sample in a dedicated dust pan.
- Transfer sample from dust pan to sample container.
- 6. Cap the sample container, attach the label and custody seal, and place in a plastic bag. Record all pertinent data in the site log book and on field data sheets. Complete the sampling analysis request form and chain of custody record before taking the next sample.
- 7. Store samples out of direct sunlight and cool to 4FC.
- 8. Leave contaminated sampling device in the sample material, unless decontamination is practical.
- 9. Follow proper decontamination procedures, then deliver sample(s) to the laboratory for analysis.

8.0 CALCULATIONS

Results are usually provided in mg/g, μ g/g, mass per unit area, or other appropriate measurement. Calculations are typically done by the laboratory.

9.0 QUALITY ASSURANCE/ QUALITY CONTROL

The following general quality assurance procedures apply:

- 1. All data must be documented on standard chain of custody forms, field data sheets or within the site logbook.
- 2. All instrumentation must be operated in accordance with operating instructions as supplied by the manufacturer, unless otherwise specified in the work plan. Equipment calibration checkout and prior activities must occur to sampling/operation, and they must be documented.

The following specific quality assurance activities apply to wipe samples:

For wipe samples, a blank should be collected for each sampling event. This consists of a sterile gauze pad, wet with the appropriate solvent, and placed in a prepared sample container. The blank will help identify potential introduction of contaminants via the sampling methods, the pad, solvent or sample container. Spiked wipe samples can also be collected to better assess the data being generated. These are prepared by spiking a piece of foil of known area with a standard of the analyte of choice. The solvent containing the standard is allowed to evaporate, and the foil is wiped in a manner identical to the other wipe samples.

Specific quality assurance activities for chip and sweep samples should be determined on a site specific basis.

10.0 DATA VALIDATION

A review of the quality control samples will be conducted and the data utilized to qualify the environmental results.

11.0 HEALTH AND SAFETY

When working with potentially hazardous materials, follow EPA, OSHA and corporate health and safety procedures.

12.0 REFERENCES

U.S. EPA, A Compendium of Superfund Field Operation Methods. EPA/540/5-87/001.

NJDEP Field Sampling Procedures Manual, February, 1988.



ATTACHMENT D: TABLES

Table 1 - Summary of Background Radiation Results Halaco Building Assessment, Oxnard, California October 21-23, 2009

E&E Project No.: 002693.2053.01RA

TDD No.: TO2-09-09-09-0002

Instrument ID	Type of Instrument	Type of Radiation	Concrete (cpm)	Wood (cpm)	Cinder Block (cpm)	Metal (cpm)
	Ludlum Model 2241-3					
2R9/2DR9	with Model 43-90 probe	alpha	4	3	6	4
	Ludlum Model 2221 with					
1A	Model 44-116 probe	beta	415	218	463	228
2B	Ludlum Model 2360 with	alpha	3	0	2	7
∠D	Model 43-93 probe	beta	310	144	329	113

Notes:

cpm: counts per minute

2009 ecology & environment, inc.

Table 2 - Summary of Static Radiological Measurements (Maximum and Average Surface Contamination)	Building Assessment, Oxnard, California October 21-23, 2009	TDD No.: TO2-09-09-0002	DescriptionAlphaAlphaAlphaAlphaAlphaBetaBeta(cpm)(dpm)(dpm)(dpm/100cm²)(dpm)(dpm/100cm²)	2 -23 -0.23 213 -64	1	Panel 1 -68 -0.68 187 -522 -5.22	above the ground) 3 -68 -0.68 402 -777 -7.77	er 2 -45 -0.45 179 -624 -6.24	anel 4 0 0.00 194 -433 -4.33	ove the ground) 1 -45 -0.45 237 242 2.42	3 -68 -0.68 408 -701	above the ground) 1 -113 -1.13 374 -1134 -11.34	above the ground) 1 -113 -1.13 433 -382 -3.82	ve the ground) 1 -68 -0.68 209 -242 -2.42	above the ground) 0 -136 -1.36 393 -892 -8.92	3	Panel 0 -90 -0.90 185 -548 -5.48	ter 3 -23 -0.23 196 -408 -4.08	er 1 -68 -0.68 142 -1096 -10.96	ove the ground) 6 45 0.45 365 -637 -6.37	bove the ground) 4 0 0.00 392 -293 -2.93	bove the ground) 8 90 0.90 481 841 8.41	Panel 3 -23 -0.23 444 369 3.69	Panel 5 23 0.23 461 586 5.86	1 -45 -0.45 375 2000	ove the ground) 5 23 0.23 402 -166 -1.66	
imum and Average	ard, California		Alpha (dnm)																								
ments (Max	ssment, Oxn r 21-23, 2009		Alpha (cnm)	2	1	1		2	4	1) 1) 1	1				3	1	9	4	8	3	5	1	5	
- Summary of Static Radiological Measure	Halaco Building Asses October	1RA	Sample Location Description	Wooden Wall (12 feet above the ground)	Metal Rafter	Metal Roof Panel	Cinder Block Wall (19 feet above the ground)	Metal Rafter	Metal Roof Panel	Wooden Wall (12 feet above the ground)	Cinder Block Wall (4 feet above the ground)	Cinder Block Wall (4 feet above the ground)	Cinder Block Wall (4 feet above the ground)	Metal Wall (4 feet above the ground)	Cinder Block Wall (19 feet above the ground)	Cinder Block Wall (12 feet above the ground)	Metal Roof Panel	Metal Rafter	Metal Rafter	Concrete Wall (4 feet above the ground)	Concrete Wall (12 feet above the ground)	Concrete Wall (19 feet above the ground)	Concrete Roof Panel	Concrete Roof Panel	Wooden Wall (19 feet above the ground)	Concrete Wall 12 feet above the ground)	
Table 2		&E Project No.: 002693.2053.01RA	Instrument	2DR9/1A	2DR9/1A	2DR9/1A	2DR9/1A	2DR9/1A	2DR9/1A	2DR9/1A	2DR9/1A	2DR9/1A	2DR9/1A	2DR9/1A	2DR9/1A	2DR9/1A	2DR9/1A	2DR9/1A	2DR9/1A	2DR9/1A	2DR9/1A	2DR9/1A	2DR9/1A	2DR9/1A	2DR9/1A	2DR9/1A	
					1	t			BAG-D-010		BAG-D-012	BAG-D-1012	BAG-D-013	BAG-D-014	BAG-D-015	BAG-D-016	BAG-D-017	BAG-D-018	BAG-D-1018	SME-D-002	SME-D-003	SME-D-004	SME-D-005	SME-D-006	SME-D-007	SME-D-008	

	Table 2	Table 2 - Summary of Static Radiological Measurements (Maximum and Average Surface Contamination)	ts (Maxim	um and A	verage Surface	Contamin	nation)	
		Halaco Building Assessment, Oxnard, California October 21-23 2009	nt, Oxnar	d, Califor	nia			
3&E Project No.: 002693.2053.01RA	002693.2053.01		, = 00 = 00 = 00 = 00 = 00 = 00 = 00 =				TDD No.: T	TDD No.: TO2-09-09-09-0002
Sample	Instrument	Sample I gostion Description	Alpha	Alpha	Alpha	Beta	Beta	Beta
Number	ID	Sample Location Description	(cpm)	(dpm)	$(dpm/100cm^2)$	(cpm)	(dpm)	$(dpm/100cm^2)$
SME-D-010	2DR9/1A	Concrete Wall (4 feet above the ground)	2	-45	-0.45	425	127	1.27
SME-D-1010	2DR9/1A	Concrete Wall (4 feet above the ground)	4	0	0.00	432	217	2.17
SME-D-011	2DR9/1A	Metal Wall (6 feet above sub-floor vault bottom)	1	89-	-0.68	245	217	2.17
SME-D-012	2DR9/1A	Concrete Wall (4 feet above the ground)	2	-45	-0.45	411	-51	-0.51
SME-D-013	2DR9/1A	Concrete Wall (12 feet above the ground)	3	-23	-0.23	380	-446	-4.46
SME-D-014	2DR9/1A	Metal Wall (4 feet above the ground)	3	-23	-0.23	187	-522	-5.22
SME-D-015	2DR9/1A	Concrete Wall (4 feet above the ground)	1	89-	89.0-	372	-548	-5.48
SME-D-016	2DR9/1A	Concrete Roof Panel	2	-45	-0.45	391	908-	-3.06
SME-D-017	2DR9/1A	Metal Rafter	5	23	0.23	282	889	88.9
SME-D-018	2DR9/1A	Concrete Wall (19 feet above the ground)	5	23	0.23	420	64	0.64
SME-D-019	2DR9/1A	Concrete Wall (12 feet above the ground)	4	0	00.0	390	-318	-3.18
SME-D-1019	2DR9/1A	Concrete Wall (12 feet above the ground)	1	89-	-0.68	409	92-	-0.76
SME-D-020	2B	Metal Roof Panel	0	-182	-1.82	136	348	3.48
SME-D-021	2B	Metal Rafter	1	-156	-1.56	140	409	4.09
SME-D-022	2B	Metal Rafter	3	-104	-1.04	100	<i>L</i> 61-	-1.97
SME-D-023	2B	Metal Roof Panel	1	-156	-1.56	116	45	0.45
SME-D-024	2B	Metal Rafter	2	-130	-1.30	127	212	2.12
SME-D-025	2B	Metal Rafter	1	-156	-1.56	191	72 <i>7</i>	7.27
SME-D-026	2B	Metal Wall	1	-156	-1.56	143	455	4.55
SME-D-027	2B	Metal Roof Panel	3	-104	-1.04	132	288	2.88
SME-D-028	2B	Metal Rafter	2	-130	-1.30	66	-212	-2.12
SME-D-029	2B	Metal Rafter	2	-130	-1.30	126	197	1.97
SME-D-030	2B	Wooden Wall (12 feet above the ground)	3	78	82.0	130	-212	-2.12
SME-D-1030	2B	Wooden Wall (12 feet above the ground)	0	0	0.00	132	-182	-1.82

	Table 2	Table 2 - Summary of Static Radiological Measurements (Maximum and Average Surface Contamination)	its (Maxim	num and A	verage Surface	Contami	nation)	
		Halaco Building Assessment, Oxnard, California October 21-23, 2009	ent, Oxnar-23, 2009	d, Califor	nia			
5&E Project No.: 002693.2053.01RA	002693.2053.01						TDD No.: T	TDD No.: TO2-09-09-09-0002
Sample	Instrument	noitairosoff noiteoo I olameS	Alpha	Alpha	Alpha	Beta	Beta	Beta
Number	ID	Sample recation resembation	(cpm)	(dpm)	$(dpm/100cm^2)$	(cpm)	(dpm)	$(dpm/100cm^2)$
SME-D-031	2B	Metal Roof Panel	1	-156	-1.56	131	273	2.73
SME-D-032	2B	Metal Rafter	0	-182	-1.82	116	45	0.45
SME-D-033	2B	Metal Rafter	1	-156	-1.56	112	-15	-0.15
SME-D-034	2B	Metal Wall (4 feet above the ground)	1	-156	-1.56	136	348	3.48
SME-D-035	2B	Cinder Block Wall (5 feet above the ground)	3	26	0.26	627	85 <i>L</i> -	-7.58
SME-D-036	2B	Cinder Block Wall (5 feet above the ground)	2	0	0.00	308	-318	-3.18
SME-D-037	2B	Metal Wall (4 feet above the ground)	1	-156	-1.56	101	-91	-0.91
SME-D-038	2B	Cinder Block Wall (4 feet above the ground)	2	78	0.78	283	<i>L</i> 69-	-6.97
SME-D-039	2B	Metal Roof Panel	1	-156	-1.56	116	45	0.45
SME-D-040	2B	Metal Rafter	1	-156	-1.56	121	121	1.21
SME-D-1040	2B	Metal Rafter	0	-182	-1.82	111	61	0.61
SME-D-041	2B	Metal Rafter (very dusty)	1	-156	-1.56	106	-106	-1.06
SME-D-042	2B	Metal Roof to Smelter Furnace	0	0	0.00	66	-682	-6.82
SME-D-043	2B	Wooden Wall (10 feet above the ground)	1	26	0.26	9/1	485	4.85
SME-D-044	2B	Metal Roof Panel	1	-156	-1.56	141	424	4.24
SME-D-045	2B	Metal Rafter	1	-156	-1.56	981	348	3.48
SME-D-046	2B	Metal Rafter	1	-156	-1.56	681	1152	11.52
SME-D-047	2B	Concrete Wall (12 feet above the ground)	0	-78	-0.78	271	-591	-5.91
SME-D-048	2B	Metal Wall (1 foot above the ground)	2	-130	-1.30	172	894	8.94
SME-D-049	2B	Concrete Wall (5 feet above the ground)	1	-52	-0.52	254	-848	-8.48
SME-D-050	2B	Wooden Wall (9 feet above the ground)	1	26	0.26	130	-212	-2.12
SME-D-1050	2B	Wooden Wall (9 feet above the ground)	2	52	0.52	681	9 <i>L</i> -	-0.76
SME-D-051	2B	Cinder Block Wall (2 feet above the ground)	0	-52	-0.52	262	-1015	-10.15
SME-D-052	2B	Metal Wall (6 feet above the ground)	1	-156	-1.56	116	45	0.45

	Lance	Table 2 - Summary of Static Nationagical Preasurements (Maximum and Average Surrace Confamination)	IIIS (IVIAXIIII)	um and A	verage Surface	Contamin	nation)	
		Halaco Building Assessment, Oxnard, California October 21-23, 2009	ent, Oxnard	d, Califor	nia			
E&E Project No.	E&E Project No.: 002693.2053.01RA						TDD No.: T	TDD No.: TO2-09-09-09-0002
Sample Number	Instrument ID	Sample Location Description	Alpha (cpm)	Alpha (dpm)	Alpha (dpm/100cm ²)	Beta (cpm)	Beta (dpm)	$\begin{array}{c} \text{Beta} \\ \text{(dpm/100cm}^2) \end{array}$
SME-D-053	2B	Cinder Block Wall (6 feet above the ground)	2	0	00.00	286	-652	-6.52
SME-D-054	2B	Metal Wall (3 feet above the ground)	0	-182	-1.82	146	200	5.00
Notes: cpm: counts per minute dpm: disintegrations per minute dpm/100 cm ² : disintegrations pe negative dpm and dpm/100 cm ² Instrument 2DR9: Ludlum Mode Instrument 1A: Ludlum Model 2 Instrument 2B: Ludlum Model 2	minute ons per minute sintegrations per r 4 dpm/100 cm² re; 1. Ludlum Model 222 udlum Model 236	Notes: cpm: counts per minute dpm: disintegrations per minute dpm/100 cm²: disintegrations per minute per 100 square cenitmeters negative dpm and dpm/100 cm² results are obtained when the sample result is lower than background result Instrument 2DR9: Ludlum Model 2221-3 with a Ludlum Model 43-90 alpha scintillator detector Instrument 1A: Ludlum Model 2321 with a Ludlum Model 44-116 beta scintillator detector Instrument 2B: Ludlum Model 2360 with a Ludlum Model 43-93 alpha and beta scintillator detector	kground result ctor letector			200	09 ecology 8	2009 ecology & environment, inc.

Table 3 - Summary of Radiological Wipe Samples (Removable Surface Contamination) Halaco Building Assessment, Oxnard, California October 21-23, 2009

E&E Project No.: 002693.2053.01RA TDD No.: TO2-09-09-09002

L&L Hoject No	002693.2053.01RA			ו יייסאן עם	.02-09-09-09-0002 I
Sample	Sample Location Description	Alpha	Alpha	Beta	Beta
Number		(dpm)	(dpm/100cm ²)	(dpm)	(dpm/100cm ²)
BAG-W-001	Metal Duct Work (Baghouse Structure)	0	0	46	-5
BAG-W-002	Metal Duct Work (Baghouse Structure)	0	0	49	11
BAG-W-003	Metal Duct Work (Baghouse Structure)	0	0	58	59
BAG-W-004	Metal Duct Work (Baghouse Structure)	0	0	40	-38
BAG-W-005	Wooden Wall (12 feet above the ground)	0	0	50	16
BAG-W-006	Metal Rafter	0	0	39	-43
BAG-W-007	Metal Roof Panel	0	0	47	0
BAG-W-008	Cinder Block Wall (19 feet above the ground)	0	0	46	-5
BAG-W-009	Metal Rafter	0	0	52	27
BAG-W-010	Metal Roof Panel	0	0	42	-27
BAG-W-011	Wooden Wall (12 feet above the ground)	0	0	52	27
BAG-W-012	Cinder Block Wall (4 feet above the ground)	0	0	36	-59
BAG-W-1012	Cinder Block Wall (4 feet above the ground)	0	0	42	-27
BAG-W-013	Cinder Block Wall (4 feet above the ground)	0	0	50	16
BAG-W-014	Metal Wall (4 feet above the ground)	0	0	48	5
BAG-W-015	Cinder Block Wall (19 feet above the ground)	0	0	46	-5
BAG-W-016	Cinder Block Wall (12 feet above the ground)	0	0	40	-38
BAG-W-017	Metal Roof Panel	0	0	45	-11
BAG-W-018	Metal Rafter	0	0	43	-21
BAG-W-1018	Metal Rafter	0	0	46	-5
SME-W-001	Metal Duct Work	0	0	33	0.33
SME-W-002	Concrete Wall (4 feet above the ground)	0	0	33	0.33
SME-W-003	Concrete Wall (12 feet above the ground)	0	0	38	0.38
SME-W-004	Concrete Wall (19 feet above the ground)	0	0	36	0.36
SME-W-005	Concrete Roof Panel	0	0	36	0.36
SME-W-006	Concrete Roof Panel	0	0	42	0.42
SME-W-007	Wooden Wall (19 feet above the ground)	0	0	33	0.33
SME-W-008	Concrete Wall 12 feet above the ground)	0	0	39	0.39
SME-W-009	Metal Side of Smelter Furnace	0	0	36	0.36
SME-W-010	Concrete Wall (4 feet above the ground)	0	0	37	0.37
SME-W-1010	Concrete Wall (4 feet above the ground)	0	0	41	-32
SME-W-011	Metal Wall (6 feet above sub-floor vault bottom)	0	0	49	11
SME-W-012	Concrete Wall (4 feet above the ground)	0	0	47	0
SME-W-013	Concrete Wall (12 feet above the ground)	0	0	42	-27
SME-W-014	Metal Wall (4 feet above the ground)	0	0	49	11
SME-W-015	Concrete Wall (4 feet above the ground)	0	0	39	-43
SME-W-016	Concrete Roof Panel	0	0	48	5
SME-W-017	Metal Rafter	0	0	51	21

Table 3 - Summary of Radiological Wipe Samples (Removable Surface Contamination) Halaco Building Assessment, Oxnard, California October 21-23, 2009

E&E Project No.: 002693.2053.01RA TDD No.: TO2-09-09-09002

	002693.2053.01RA			וועלוע ועלי.	02-09-09-09-0002
Sample	Sample Location Description	Alpha	Alpha	Beta	Beta
Number	Sumple Books a computer	(dpm)	(dpm/100cm ²)	(dpm)	(dpm/100cm ²)
SME-W-018	Concrete Wall (19 feet above the ground)	0	0	50	16
SME-W-019	Concrete Wall (12 feet above the ground)	0	0	51	21
SME-W-1019	Concrete Wall (12 feet above the ground)	1	0.01	51	21
SME-W-020	Metal Roof Panel	0	0	40	0.4
SME-W-021	Metal Rafter	0	0	36	0.36
SME-W-022	Metal Rafter	0	0	56	0.56
SME-W-023	Metal Roof Panel	0	0	6	0.06
SME-W-024	Metal Rafter	0	0	46	0.46
SME-W-025	Metal Rafter	0	0	12	0.12
SME-W-026	Metal Wall	0	0	24	0.24
SME-W-027	Metal Roof Panel	0	0	4	0.04
SME-W-028	Metal Rafter	1	0.01	0	0
SME-W-029	Metal Rafter	0	0	14	0.14
SME-W-030	Wooden Wall (12 feet above the ground)	0	0	44	-16
SME-W-1030	Wooden Wall (12 feet above the ground)	0	0	32	-80
SME-W-031	Metal Roof Panel	0	0	48	5
SME-W-032	Metal Rafter	0	0	45	-11
SME-W-033	Metal Rafter	0	0	53	32
SME-W-034	Metal Wall (4 feet above the ground)	0	0	45	-11
SME-W-035	Cinder Block Wall (5 feet above the ground)	0	0	43	-21
SME-W-036	Cinder Block Wall (5 feet above the ground)	0	0	47	0
SME-W-037	Metal Wall (4 feet above the ground)	0	0	52	27
SME-W-038	Cinder Block Wall (4 feet above the ground)	0	0	49	11
SME-W-039	Metal Roof Panel	0	0	46	-5
SME-W-040	Metal Rafter	0	0	51	21
SME-W-1040	Metal Rafter	0	0	48	5
SME-W-041	Metal Rafter (very dusty)	0	0	51	21
SME-W-042	Metal Roof to Smelter Furnace	0	0	45	-11
SME-W-043	Wooden Wall (10 feet above the ground)	0	0	48	5
SME-W-044	Metal Roof Panel	0	0	61	75
SME-W-045	Metal Rafter	0	0	44	-16
SME-W-046	Metal Rafter	0	0	54	38
SME-W-047	Concrete Wall (12 feet above the ground)	0	0	47	0
SME-W-048	Metal Wall (1 foot above the ground)	0	0	53	32
SME-W-049	Concrete Wall (5 feet above the ground)	0	0	48	5
SME-W-050	Wooden Wall (9 feet above the ground)	0	0	46	-5
SME-W-1050	Wooden Wall (9 feet above the ground)	0	0	48	5
SME-W-051	Cinder Block Wall (2 feet above the ground)	0	0	54	38

Table 3 - Summary of Radiological Wipe Samples (Removable Surface Contamination) Halaco Building Assessment, Oxnard, California October 21-23, 2009

E&E Project No.: 002693.2053.01RA

Sample Number	Sample Location Description	Alpha (dpm)	Alpha (dpm/100cm ²)	Beta (dpm)	Beta (dpm/100cm ²)
SME-W-052	Metal Wall (6 feet above the ground)	0	0	55	43
SME-W-053	Cinder Block Wall (6 feet above the ground)	0	0	54	38
SME-W-054	Metal Wall (3 feet above the ground)	0	0	54	38

Notes:

dpm: disintegrations per minute

dpm/100 cm²: disintegrations per minute per 100 square centimeters

negative dpm/100 cm² results are obtained when the sample result is lower than background result

2009 ecology & environment, inc.

TDD No.: TO2-09-09-09-0002

H&H Project No	No · 007693 2053 01RA	. α		Table 4 Ha	Validated An laco Building	Table 4 - Validated Analytical Results - Dust Wipe Samples Halaco Building Assessment, Oxnard, California October 21-23, 2009	s - Dust Wipe knard, Califor 109	Samples nia			CF. SN CCF	C000-60-60-60-COT. ON CICT
						Sampl	ple ID					
Metal	10-X1B	BLK-02	SME-M-001	SME-M-002	SME-M-005	SME-M-007	SME-M-009	SME-M-015	SME-M-017	SME-M-030	SME-M-031	SME-M-032
Antimony	ND	ND	N	0.338	2.96	3.02	ND	ND	1.11	ND	2,270	3.92
Arsenic	ND	0.705	7.43	2.27	43.3	21.7	ND	1.34	3.71	ND	12.5	4.67
Barinm	0.166	0.128	3.69	61	06	184	4.44	8.2	41.1	6.76	21	151
Beryllium	ND	ND	ND	0.567	0.101	2.27	ND	ND	0.793	0.261	0.144	1.98
Cadmium	ND	ND	ND	0.1 U	0.215	1.03	ND	ND	0.164	ND	1.81	0.109
Chromium	ND	ND	11.8	3.56	5.0	28.5	8.38	0.342	14.4	0.502	0.468	90.9
Cobalt	ND	ND	10.4 J	0.704 J	ND	1.07 J	1.85 J	0.449 J	2.45 J	ND	ND	0.515 J
Copper	2.3	1.96	60.7	21.2	9.59 U	328	11.6	3.51 U	77.5	2.1 U	3.37 U	15.5
Lead	ND	ND	2.25 J	6.71 J	0.742 J	17.7 J	ND	ND	15 J	ND	6.02 J	1.77 J
Molybdenum	0.26	0.278	1.86	0.375	0.821	0.855	ND	0.29	1.51	ND	0.358	0.352
Nickel	ND	ND	120	1.07	0.383	16.4	3.97	ND	15.6	0.19	0.152	1.57
Selenium	1.93	1.98	6.41	0.585	7.41	60.9	5.65	0.29	3.52	0.828	5.91	3.96
Silver	ND	ND	0.565	QN ON	QN	0.295	ND	ND	0.273	ND	ND	ND
Thallium	ND	ND	ND	0.64	3.12	1.78	ND	ND	N	ND	ND	ND
Vanadium	ND	ND	2.02	1.86	2.56	4.81	1.67	ND	2.33	0.134	0.192	1.33
Zinc	111	97.5	120 U	176 U	174 U	311 U	114 U	116 U	317 U	124 U	394 U	80.3 U
Metal	BAG-M-001	BAG-M-002	BAG-M-003	BAG-M-004	BAG-M-005	BAG-M-1005	BAG-M-009	BAG-M-015	BAG-M-1015			
Antimony	ND	0.432	ND	1.44	4.54	9.45	1.17	0.959	0.806			
Arsenic	8.58	3.72	5.62	6.72	3.88	7.86	5.16	3.42	4.09			
Barium	7.78	36.7	5.16	13.2	164	221	105	27.8	37.5			
Beryllium	ND	3.21	ND	0.209	1.98	3.44	1.56	0.283	0.249			
Cadmium	ND	ND	ND	ND	0.527	1.49	0.173	0.133	ND			
Chromium	63	6.48	26	55	8.13	16.9	60.9	3.29	2.6			
Cobalt	8.85 J	4.26 J	3.51 J	13.6 J	0.676 J	1.25 J	3.33 J	1.49 J	0.932 J			
Copper	50.9	32.1	45.9	229	55.7	113	27.2	13.3	9.88			
Lead	ND	1.64 J	ND	ND	16.1 J	33.2 J	4.91 J	2.34 J	1.55 J			
Molybdenum	3.43	ND	6.44	27.3	0.485	0.917	ND	0.445	0.514			
Nickel	30.5	7.44	7.33	232	6.13	12.7	4.03	1.26	1.03			
Selenium	17.6	13.6	13	9.45	2.07	4.43	3.46	0.521	0.614			
Silver	1.19	0.632	ND	1.3	0.218	0.412	ND	ND	ND			
Thallium	ND	ND	ND	ND	N	0.544	ND	1.64	1.71			
Vanadium	7.34	2.25	89.9	2.63	2.72	4.88	1.7	0.758	0.701			
Zinc	107 U	161 U	111 J	151 U	2,080	4,740	205 U	131 U	129 U			
Notes:												
μg/filter: micrα	µg/filter: micrograms per filter		ND: not detected		J: Estimated		U: non-detect			•	,	,
all results in µ	μg/filter									2(2009 ecology & environment, inc.	vironment, inc.

Table 5 - Validated Analytical Results - Solid SamplesHalaco Building Assessment, Oxnard, CaliforniaOctober 21-23, 2009

TDD No.: TO2-09-09-09-0002 TTLC 500 500 10,000 2,500 8,000 2,500 3,500 1,000 2,000 2,400 5,000 700 100 100 500 75 na 52,000 610,000 190,000 2.9 5.5 17 1100 5.6 1.4 220 35 3,000 1.3 na 4.7 310,000 1.6 41,000 5,100 20,000 5,200 5,100 5,100 2,000 1,400 800 300 **BAG-S-003** 6.37 28.2 700 33.8 3.69 117 14.3 798 J 81 17.5 103 48.9 J ND ND 120 **BAG-S-002**
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14.5
237
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20 44.4 32.5 49.8 15.6 J 1.92 ND **Fotal Petroleum Hydrocarbons by** E&E Project No.: 002693.2053.01RA (PH (disel range organics) Bromodichloromethane Metals by EPA 6010E Carbon tetrachloride Carbon disulfide Bromomethane Chlorobenzene Chloroethane Molybdenum Bromoform Chloroform Chromium Vanadium Antimony Selenium Chemical Beryllium Cadmium Thallium Arsenic Acetone Benzene Barium Copper Cobalt Nickel Silver Lead Zinc

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			He	Halaco Building Assessment, Oxnard, California October 21-23, 2009	Assessment, ctoher 21-23.	Oxnard, Cali 2009	fornia				
E&E Project No.: 002693.2053.01RA	IRA							۱	ı	TDD No.:	TDD No.: TO2-09-09-09-0002
						Sample ID					
Chemical	SME-S-001	SME-S-002	SME-S-003	SME-S-1003	SME-S-004	SME-S-005	SME-S-006	BAG-S-001	BAG-S-002	BAG-S-003	
Chloromethane	ND	ND	ND	ND	N/A	ND	0.00301	0.000604	ND	ND	510
Dibromochloromethane	ND	ND	ND	ND	N/A	ND	ND	ND	ND	ND	3.4
Ethylbenzene	ND	ND	ND	ND	N/A	ND	ND	ND	ND	ND	29
Methylene chloride	ND	ND	0.00729 J	0.00626 J	N/A	ND	ND	ND	ND	ND	54
Styrene	ND	ND	0.00368 J	0.00192 J	N/A	ND	ND	ND	ND	ND	38,000
Tetrachloroethylene	ND	ND	ND	ND	N/A	ND	ND	ND	ND	QN	2.7
Toluene	ND	ND	0.000688 J	0.000444 J	N/A	ND	QN	QN	QN	ND	46,000
Trichloroethylene	ND	ND	ND	ND	N/A	ND	ND	QΝ	QΝ	QN	14
Vinyl acetate	ND	ND	ND	ND	N/A	ND	ND	ND	ND	ND	4,200
Vinyl chloride	ND	ND	ND	ND	N/A	ND	ND	ΩN	QN	ND	1.7
Xylenes (total)	ND	ND	0.000502 J	ND	N/A	ND	ND	0.00156	ΩN	QN	2600
cis-1,2-Dichloroethylene	ND	ND	ND	ND	N/A	ND	ND	QΝ	QΝ	QN	10,000
cis-1,3-Dichloropropylene	ND	ND	ND	ND	N/A	ND	ND	ND	ND	ND	na
tert-Butyl methyl ether	ND	ND	ND	ND	N/A	ND	ND	QΝ	ΩN	QN	190
trans-1,2-Dichlorethylene	ND	ND	ND	ND	N/A	QN	QΝ	QΝ	ΩN	QN	500
trans-1,3-Dichloropropylene	ND	ND	ND	ND	N/A	ND	ND	QΝ	ΩN	QN	na
Alpha Spectroscopy by DOE	EML HASL-	300, Th-01-RC	Modified (pCi,	(g)							rPRG
Thorium-228	N/A	ND	ND	ND	N/A	ND	QΝ	QΝ	QN	1.02	24.2
Thorium-230	N/A	ND	ND	ND	N/A	0.271	0.512	IN QN	ΩN	1.45	3.49
Thorium-232	N/A	ND	ND	ND	N/A	ND	0.519	ΩN	QN	0.677	3.1
Gamma Spectroscopy by DC	JE HASL-300 ,	,4.5.2.3/Ga-01R	(pCi/g)								rPRG
Actinium-228	N/A	ND	ND UJ	ND	N/A	ND	ND	ND	ND	0.374	732
Bismuth-214	N/A	ND	0.142	ND	N/A	ND	ND	QN	IN UN	0.322	8,190
Cesium-137	N/A	ND	ND	ND	N/A	ND	ND	ND	ND	ND	3.88
Lead-212	N/A	0.141	ND	ND	N/A	ND	ND	ND	ND	0.473	3,640
Lead-214	N/A	0.174	ND	ND UJ	N/A	ND	ND	ND	ND	0.357	46,300
Potassium-40	N/A	44.3	11.8	13.6	N/A	32.1	54	6.97	35.5	17.7	0.108
Radium-228	N/A	ND	ND UJ	ND	N/A	ND	ND	ND	ND	0.374	0.26
Thallium-208	N/A	ND	0.057	ND	N/A	ND	ND	ND	ND	0.201	22,600
Notes:											
mg/kg: milligrams per kilogran	m				TTLC: California Total Threshold Limit Concentration	nia Total Thresl	hold Limit Con	centration			
µg/kg: micrograms per kilogra	un				N/A: not analyzed	sed					
pCi/g: picocuries per gram					ND: not detected	þ					
all results in milligrams per kilogram (mg/kg), unless otherwise specified J: estimated	logram (mg/kg)), unless otherwi	se specified		J: estimated		•	•			
"IRSL: U.S. EPA Regional Scring DDC: 11 S FDA Draliming."	eening Level, I Pamadiation G	ndustrial Soil, A	pril 2009 Aldes Pesiden	iol Coil Eabrus	UJ: The detection limit may be estimated or uncertain	on limit may be	estimated or u	ncertain			
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ATTACHMENT E: VALIDATED DATA REPORTS



Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
Project Number: 002693,2053,01RA	TDD No: TO2-08-09-09-0002

Laboratory: GEL Laboratories, LLC	Lab Project Number: 239855
Sampling Dates: 10/21/09 & 10/22/09	Sample Matrix: Filter
Analytical Method: METALS (EPA 6010B)	Data Reviewer: M. Song

REVIEW AND APPROVAL:

Data Reviewer:	Mindy Song	Date:	12/7/0/
Technical QA Reviewe	r: Howard Edwards	Date:	12/1/09
Project Manager:	Dan Haag	P Date:	12/9/09

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
• 1	BLK-01	239856-001
2	BI.K-02	239855-002
3	SME-M:001	239865-003
4	SME-M-002	239855-004
5	SME-M-006	239865-005
6	SME-M-007	239855-006
7	SME-M-009	239855-007
8	- SME-M-016	239065-008
9	SME-M-017	239858-009
10	SME-M-030	239856-010
11	SME-M-031	239855-011
12	SME-M-032	239855-012
13	BAG-M-001	239855-013
14	BAG-M-002	230855-014
15	BAG-M-003	239855-015
16	BAG-M-004	239856-016
17	BAG-M-005	239856-017
18	BAG-M-1005	239855-018
19	BAG-M-009	239865-019
20	BAG-M-015	239855-020
21	BAG-M-1015	230056-021

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
Project Number: 002693.2053.01RA	TDD No: TO2-09-09-0002

DATA PACKAGE COMPLETENESS CHECKLIST:

	X	Included: no problems
•	*	Included: problems noted in review
	0	Not Included and/or Not Available
•	NR	Not Required
•	RS	Provided As Re-submission
Case Nar	rative:	
	X	Case Narrative present
Quality C	ontrol S	ummary Package:
,	Х	Data Summary sheets
	. X	Initial and Continuing Calibration results
	Χ	CRDL Standard results
	*	Preparation Blank and Calibration Blank results
	Х	ICP Interference Check Sample results
	NR	Matrix Spike recoveries
	NR	Matrix Duplicate results
	Х	Laboratory Control Sample recoveries
	NR_	Method of Standard Additions results
·	Χ	ICP Serial Dilution results
	Х	Instrument Detection Limits

Raw QC Data Package Section

Checklist Code:

X	_ Chain-of-Custody Records
. X	Instrument Printouts
Х	Sample Preparation Notebook Pages
X	Logbook and Worksheet Pages
NR	Percent Solids Determination

NR ICP Linear Ranges Preparation Log Analysis Run Log

ICP Interelement Correction Factors

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
Project Number: 002693.2053.01RA	TDD No: TO2-09-09-0902

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	Holding Times	YES
2	Initial and Continuing Calibrations	YES
3	Laboratory Control Sample	YES
4	Matrix Spike	N/A
5	Blanks and Background Samples	NO
6	Duplicate Analyses	NO
7	Interference Check Samples and Serial Dilution Analysis	YES
8	Post Digestion Spike and Standard Addition Analysis	N/A
9	Analyte Quantitation	YES
10	Overall Assessment of Data	YES
11	Usability of Data	YES

Comments: N/A: Not Applicable.

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
Project Number: 002693.2053.01RA	TDD No: TO2-09-09-0902

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<u>X</u>	Acceptable
-	Acceptable with qualification
	Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the nondetected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

All Sample Matrices:

Mercury: 28 days (from collection) for analysis.

Hexavalent chromium: 24 hours (from collection) for analysis.

All other metals: 180 days (from collection) for analysis.

Comments: All holding times were met.

2. INITIAL AND CONTINUING CALIBRATION VERIFICATION

X	Acceptable	
	Acceptable with	qualification
	Unacceptable	

Unless flagged below, an initial calibration verification (ICV) and a calibration blank were analyzed at the beginning of the run, and a continuing calibration verification (CCV) and a calibration blank were analyzed after every ten samples, and at the end of the run. ICV and CCV recoveries were within a range of 80-120% for mercury and tin, and 90-110% for all other metals. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 65% or above 135% (for mercury and tin) or below 75% or above 125% (for all other metals), all associated data are rejected (R).

Comments: All recoveries of metals in initial and continuing calibration verifications were within the control limits.

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
Project Number: 002693.2053.01RA	TDD No: TO2-09-09-0002

3. LABORATORY CONTROL SAMPLE
X Acceptable Acceptable with qualification Unacceptable No Laboratory Control Samples Analyzed
Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).
Comments: Percent recoveries of LCS were within the control limits.
4. MATRIX SPIKE
Acceptable Acceptable with qualification Unacceptable X No Matrix Spikes Analyzed
Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to

Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. Unless flagged below, one laboratory control sample was analyzed at a rate of one per batch or one per 20 samples. Recoveries were within a range of 75-125%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: No sample was designated for matrix spike due to samples being filter matrix but LCS and LCD were analyzed instead.

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
Project Number: 002693.2053.01RA	TDD No: TO2-09-09-0902

•
5. BLANKS AND BACKGROUND SAMPLES
Acceptable
X Detection Limits Adjusted
The following blanks were analyzed: X Method (preparation) Blanks X Field Blanks Calibration Blanks Rinsate Blanks Background Samples Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.
Comments: No contamination was found in the preparation blanks at reporting limit level but trace levels of Cu (2.3 ug /filter) & Zn (111 ug /filter) in BLK-01 and Cu (1.96 ug /filter) & Zn (97.5 ug /filter) in BLK-02 were found. Detected Cu and Zn results were qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.
6. DUPLICATE ANALYSES
Acceptable X Acceptable with qualification Unacceptable No Duplicates Analyzed
Type of duplicates analyzed: X Field Duplicates Laboratory Duplicates
Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the detected results as estimated (J) for any analyte whose RPD in a laboratory duplicate exceeds 20% for water samples or 35% for soil samples.
RPD = <u>2(Value 1 - Value 2)</u> x 100% Value 1 + Value 2

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
Project Number: 002693.2053.01RA	TDD No: TO2-09-09-0002

Analyte (ug/Filter)	BAG-M-005	BAG-M-1005	RPD (%)
Antimony	4.54	9.45	70*
Arsenic	3.88	7.86	68*
Barium	164	221	30*
Beryllium	1.98	3.44	54*
Cadmium	0.527	1.49	95*
Chromium	8.13	16.9	70*
Cobalt	0.676	1.25	60*
Copper	55.7	113	68*
Lead	16.1	33.2	69*
Molybdenum	0.485	0.917	62*
Nickel	6.13	12.7	70*
Selenium	2.07	4.43	73*
Silver	0.218	0.412	62*
Thailium	<0.5	0.544	Not Calculated
Vanadium	2.72	4.88	57*
Zinc	2080	4740	78*

*: RPD>35%

Comments: BAG-M-1005 was a field duplicate of BAG-M-005 and the detected results with a high RPD were qualified as estimated (J).

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
Project Number: 002693.2053.01RA	TDD No: TO2-09-09-0002

Analyte (ug/Filter)	BAG-M-015	BAG-M-1015	RPD (%)
Antimony	0.959	0.806	17 ·
Arsenic	3.42	4.09	18
Barium	27.8	37.5	30
Beryllium	0.283	0.249	13
Cadmium	0.133	<0.1	Not Calculated
Chromium	3.29	2.60	23
Cobalt	1.49	0.932	· 46*
Copper	13.3	9.88	30
Lead	2.34	1.55	41*
Molybdenum	0.445	0.514	14
Nickel	1.26	1.03	20
Selenium	0.521	0.614	16
Silver	<0.1	<0.1	0
Thallium	1.64	1.71	4
Vanadium	0.758	0.701	8
Zinc	131	129	2

*: RPD>35%

Comments: BAG-M-1015 was a field duplicate of BAG-M-015 and all RPDs except Co and Pb were within the control limit. The detected Co and Pb results were qualified as estimated (J).

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
Project Number: 002693.2053.01RA	TDD No: TO2-09-09-0902

	7. INTERFERENCE CHECK SAMPLES AND SERIAL DILUTION ANALYSIS
X	Acceptable Acceptable with qualification Unacceptable Not required
beginnir within a detected	ence Check Samples (ICS) - Unless flagged below, an ICS was analyzed at the fing and end of each run and at least twice every eight hours. Recoveries were range of 80-120%. For analytes which exceeded these control limits, associated I results are qualified as estimated (J) if the concentrations of AI, Ca, Fe, or Mg er in the sample than in the ICS.
at a rate 50 times	lution Analysis - Unless flagged below, a serial dilution analysis was performed of one per 20 samples on a sample having analyte concentrations greater than the IDL. Percent differences were within a range of 0-10%. For analytes which d these control limits, associated detected results are qualified as estimated (J).
	nts: ICS recoveries were within the control limit. SME-M-002 and BAG-M-1015 were used for serial dilution and all QC requirements t.
	8. POST DIGESTION SPIKE AND STANDARD ADDITIONS
X	Acceptable Acceptable with qualification Unacceptable Not required
indicate	estion spikes - If a furnace AA result was flagged by the laboratory with an E to interference, and the associated post-digestion spike recovery was less than associated results are rejected (R).
	of Standard Additions - If the method of standard additions was required and the on coefficient was less than 0.995, the associated results were qualified as d (J).

Comments:

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
Project Number: 002693.2053.01RA	TDD No: TO2-09-09-0902

9. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

Water samples:

ug/L = (Instrument printout concentration, mg/L)(1000 ug/mg)(final volume of extract, mL)

(Initial volume of extract, mL)

Soil samples:

mg/kg = (Instrument printout concentration, mg/L)(final volume of extract, mL)(0.001 L/mL) (weight of sample extracted, g)(0.001 kg/g)(fraction solids)

Comments: Analyte quantitation is acceptable.

Sample: SME-M-007

As: (216.59 ug/L) (0.05 L/filter) (2) = 21.659 ug/filter. Lab reported 21.7 ug/ filter. Cr: (285.05 ug/L) (0.05 L/filter) (2) = 28.505 ug/filter. Lab reported 28.5 ug/ filter. Cu: (3275.0 ug/L) (0.05 L/filter) (2) = 327.5 ug/filter. Lab reported 328 ug/ filter. Pb: (176.62 ug/L) (0.05 L/filter) (2) = 17.662 ug/filter. Lab reported 17.7 ug/ filter.

10. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

	Acceptable
X	Acceptable with Qualification
	Rejected
Accepte	ed data meet the minimum requirements for the following EPA data category:
	ERS Screening
	Non-definitive with 10 % Conformation by Definitive Methodology
	Definitive, Comprehensive Statistical Error Determination was performed.
<u>X</u>	Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments: Data as reported are valid.

Samples SME-M-030, SME-M-032, BAG-M-005, and BAG-M-1005 reacted severely to the acid / heat during the prep procedure and it created a foam-like matrix that breached the sample vessel. The samples were analyzed as is. The reported values of these samples are to be considered biased low due to samples loss during the prep procedure.

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
Project Number: 002693.2053.01RA	TDD No: TO2-09-09-0002

11. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the <u>EPA</u>
<u>EMERGENCY RESPONSE SECTION AND SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM</u>
<u>QUALITY ASSURANCE SAMPLING PLAN FOR SOIL, WATER AND MISCELLANEOUS MATRIX SAMPLING,</u>
<u>HALACO BUILDING ASSESSMENT, OXNARD, VENTURA COUNTY, CALIFORNIA, OCTOBER 16, 2009</u>
(QASP).

The following data use objective was indicated in the QASP:

TO ASSIST IN DETERMINING THE PRESENCE OR ABSENCE OF A HAZARDOUS MATERIAL OR SUBSTANCE AT LEVELS ABOVE AN AVAILABLE DETECTION OR QUANTIFICATION LEVEL.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVE.

B. These data meet quality objectives stated in the QASP.

AS INDICATED IN SECTION 2.4 OF THE QASP, THE INVESTIGATION WILL GENERATE BOTH SCREENING AND DEFINITIVE DATA AND TABLE E OF THE QASP OUTLINES THE DATA QUALITY INDICATOR GOALS APPLICABLE TO THE DEFINITIVE DATA QUALITY LEVEL. THE DATA IN THIS PACKAGE MEET THESE REQUIREMENTS.

12. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problems requiring corrective action were found.

Resolution: Not required.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.

SDG No: 239855

METHOD TYPE: SW846

SAMPLE ID: 239855001

CLIENT ID: BLK-01

CONTRACT: ECOL00209

MATRIX:F		DATE R	ECEIVED	27	-OCT-	09	LEVEI	.: Low	%SOLIDS:	
CAS No	Analyte	Result	Units	C	Qual	M	MDL	DE	Instrument ID	Analytical Run
7440-36-0	Antimony	0.33	ug/Filter	U		P	0.33	2	OPTIMA1	111109-2
7440-38-2	Arsenic	0.5	ug/Filter	U	•	P	0.5	2	OPTIMA1	1111092
7440-39-3	Barium	0.166	ug/Filter	В		P	0.1	2	OPTIMA1	111109-2
7440-41-7	Beryllium	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	111109-2
7440-43-9	Cadmium	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	111109-2
7440-47-3	Chromium	0.15	ug/Filter	U		P	0.15	2	OPTIMA1	111109-2
7440-48-4	Cobalt	0.2	ug/Filter	U		P	0.2	2	OPTIMA1	111109-2
7440-50-8	Copper	2.3	ng/Filter			P	0.3	2	OPTIMA1	1111092
7439-92-1	Lead	0.25	ug/Filter	U		P	0.25	2	OPTIMA1	111109-2
7439-98-7	Molybdenum	0.26	ug/Filter	В		P	0.2	2	OPTIMA1	111109-2
7440-02-0	Nickel	0.15	ug/Filter	U		P	0.15	2	OPTIMA1	111109–2
7782-49-2	Selenium	1.93	ug/Filter	В		P	0.5	2	OPTIMA1	111109-2
7440-22-4	Silver	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	111109-2
7440-28-0	Thallium	0.5	ug/Filter	U		P	0.5	2	OPTIMA1	111109-2
7440-62-2	Vanadium	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	111109-2
7440-66-6	Zinc	111	ug/Filter			P	0.33 -	2	OPTIMA1	111109-2

12/2/09

SDG No: 239855

METHOD TYPE: SW846

SAMPLE ID: 239855002

CLIENT ID: BLK-02

CONTRACT: ECOL00209

MATRIX:F

DATE RECEIVED 27-OCT-09

LEVEL: Low %SOLIDS:

						-				
CAS No	Analyte	Result	Units	C	Qual	M	MDL	DF	Instrument ID	Analytical Run
7440-36-0	Antimony	0.33	ug/Filter	U		P	0.33	2	OPTIMA1	111109–2
7440-38-2	Arsenic	0.705	ug/Filter	В		P	0.5	2	OPTIMA1	111109-2
7440-39-3	Barium	0.128	ug/Filter	В		P	0.1	2	OPTIMA1	111109-2
7440-41-7	Beryllium	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	1111092
7440-43-9	Cadmium	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	111109-2
7440-47-3	Chromium	0.15	ug/Filter	U		P	0.15	2	OPTIMA1	111109–2
7440-48-4	Cobalt	0.2	ng/Filter	U		P	0.2	2	OPTIMA1	111109-2
7440-50-8	Copper	1.96	ug/Filter			P	0.3	2	OPTIMA1	111109-2
7439-92-1	Lead	0.25	ug/Filter	ប		P	0.25	2	OPTIMA1	111109-2
7439-98-7	Molybdenum	0.278	ug/Filter	В		P	0.2	2	OPTIMA1	111109-2
7440-02-0	Nickel	0.15	ug/Filter	U		P	0.15	2	OPTIMA1	111109-2
7782-49-2	Selenium	1.98	ug/Filter	В		P	0.5	2	OPTIMA1	111109-2
7440-22-4	Silver	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	111109-2
7440-28-0	Thallium	0.5	ug/Filter	U		P	0.5	2	OPTIMA1	111109-2
7440-62-2	Vanadium	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	1111092
7440-66-6	Zinc	97.5	ug/Filter			P	0.33	2	OPTIMA1	111109-2

12/2/09

SDG No: 239855

METHOD TYPE: SW846

SAMPLE ID: 239855003

CLIENT ID: SME-M-001

CONTRACT: ECOL00209

MATRIX:F		DATE R	ECEIVEE	27	/-OCT-()9	LEVEI	.; Low	%SOLIDS:	
CAS No	Analyte	Result	<u>Units</u>	<u>C</u>	Qual	M	MDL	DF	Instrument ID	Analytical Run
7440-36-0	Antimony	0.33	ug/Filter	U		P	0.33	2	OPTIMA1	1111092
7440-38-2	Arsenic	7.43	ug/Filter	В		P	2.5	10	OPTIMA1	111109-2
7440-39-3	Barium	3.69	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-41-7	Beryllium	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	111109-2
7440-43-9	Cadmium	0.5	ug/Filter	U		P	0,5	10	OPTIMA1	111109-2
7440-47-3	Chromium	11.8	ug/Filter			P	0.15	2	OPTIMA1	111109-2
7440-48-4	. Cobalt	10.4 J	ug/Filter	•		P	0.2	2	OPTIMA1	111109-2
7440-50-8	Copper	60.7	ug/Filter			P	1.5	10	OPTIMA1	1111092
7439-92-1	Lead	2.25 J	ug/Filter	В		P	1.25	10	OPTIMA1	111109-2
7439-98-7	Molybdenum	1.86	ug/Filter	В		P	1	10	OPTIMA1	111109-2
7440-02-0	Nickel	7.82	ug/Filter			P	0.15	2	OPTIMAI	111109-2
7782-49-2	Selenium	6.41	ug/Filter	В		P	2.5	10	OPTIMA1	111109-2
7440-22-4	Silver	0.565	ug/Filter	В		Ρ.	0.5	10	OPTIMA1	111109-2
7440280	Thallium	0.5	ug/Filter	U		P	0.5	2	OPTIMA1	111109-2
7440-622	Vanadium	2.02	ug/Filter	В		P	0.5	10	OPTIMA1	111109-2
7440-66-6	Zinc	120 <i>U</i>	ug/Filter			P	1.65	10	OPTIMA1	1111092

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SDG No: 239855

METHOD TYPE: SW846

SAMPLE ID: 239855004

CLIENT ID: SME-M-002

CONTRACT: ECOL00209

MATRIX:F		DATE R	ECETVEE	27	-OCT-	09	LEVE	L: Low	%SOLIDS:		
CAS No	<u>Analyte</u>	Result	Units	C	Qual	М	MDL .	DF	Instrument ID	Analytical Run	
7440-36-0	Antimony	0.388	ug/Filter	В		P	0.33	2	OPTIMA1	111109–2	
7440-38-2	Arsenic	2.27	ug/Filter	В		P	0.5	2	OPTIMA1	111109-2	
7440-39-3	Barium	61	ug/Filter			P	0.1	2	OPTIMA1	111109–2	
7440-41-7	Beryllium	0.567	ug/Filter			P	0.1	2	OPTIMA1	111109-2	
7440-43-9	Cadmium	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	111109-2	
7440-47-3	Chromium	3.56	ug/Filter			P	0.15	2	OPTIMA1	111109-2	
7440-48-4	Cobalt	0.704 J	ug/Filter			P	0.2	2	OPTIMA1	111109-2	
7440-50-8	Copper	21.2	ug/Filter			P	0.3	2	OPTIMA1	111109-2	
7439-92-1	Lead	6.71 J	ug/Filter			P	0.25	2	OPTIMA1	1111092	
7439-98-7	Molybdenum	0.375	ug/Filter	В		P	0.2	2	OPTIMA1	111109-2	
7440-02-0	. Nickel	1.07	ug/Filter			P	0.15	2	OPTIMA1	111109-2	
7782492	Selenium	0.585	ug/Filter	В		P	0.5	2	OPTIMA1	111109-2	
7440-22-4	Silver	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	111109-2	
7440280	Thallium	0.64	ug/Filter	В		P	0.5	2	OPTIMA1	111109-2	
7440-62-2	Vanadium	1.86	ug/Filter			P	0.1	2	OPTIMA1	111109-2	
7440-66-6	Zinc	176 U	ug/Filter			P	0.33	2	OPTIMA1	111109-2	

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METALS
-1INORGANICS ANALYSIS DATA PACKAGE

SDG No: 239855

METHOD TYPE: SW846

SAMPLE ID: 239855005

CLIENT ID: SME-M-005

CONTRACT: ECOL00209

MATRIX:F		ECEIVEI	27	/-ОСТ	09	LEVEL	: Low	%SOLIDS:	
<u>Analyte</u>	Result	<u>Units</u>	C	<u>Qual</u>	М	MDL ·	<u>DF</u>	Instrument ID	Analytical Run
Antimony	2.96	ug/Filter			P	0.33	2	OPTIMA1	111109–2
Arsenic	43.3	ug/Filter			P	0.5	2	OPTIMA1	111109-2
Barium	90	ug/Filter			P	0.1	2	OPTIMAI	1111092
Beryllium	0.101	ug/Filter	В		P	0.1	2	OPTIMA1	111109-2
Cadmium	0.215	ug/Filter	В		P	0.1	2	OPTIMA1	111109-2
Chromium	5	ug/Filter			P	0.15	2	OPTIMA1	1111092
Cobalt	0.2	ug/Filter	U		P	0.2	2	OPTIMA1	1111092
Copper	9.59 U	ug/Filter			P	0.3	2	OPTIMA1	111109-2
Lead	0.742 J	ug/Filter	В		P	0.25	2	OPTIMAI	1111092
Molybdenum	0.821	ug/Filter	В		P	0.2	2	OPTIMA1	111109-2
Nickel	0.383	ug/Filter	В		P	0.15	2	OPTIMA1	1111092
Selenium	7.41	ug/Filter			P	0.5 .	2	OPTIMA1	1111092
Silver	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	1111092
Thallium	3.12	ug/Filter			P	0.5	2	OPTIMA1	111109-2
Vanadium	2.56	ug/Filter	-		P	0.1	2	OPTIMA1	111109-2
	Analyte Antimony Arsenic Barium Beryllium Cadmium Chromium Cobalt Copper Lead Molybdenum Nickel Selenium Silver Thallium	Analyte Result Antimony 2.96 Arsenic 43.3 Barium 90 Beryllium 0.101 Cadmium 0.215 Chromium 5 Cobalt 0.2 Copper 9.59 U Lead 0.742 J Molybdenum 0.821 Nickel 0.383 Selenium 7.41 Silver 0.1 Thallium 3.12	Analyte Result Units Antimony 2.96 ug/Filter Arsenic 43.3 ug/Filter Barium 90 ug/Filter Beryllium 0.101 ug/Filter Cadmium 0.215 ug/Filter Chromium 5 ug/Filter Cobalt 0.2 ug/Filter Copper 9.59 U ug/Filter Lead 0.742 J ug/Filter Molybdenum 0.821 ug/Filter Nickel 0.383 ug/Filter Selenium 7.41 ug/Filter Silver 0.1 ug/Filter Thallium 3.12 ug/Filter	Analyte Result Units C Antimony 2.96 ug/Filter Arsenic 43.3 ug/Filter Barium 90 ug/Filter Beryllium 0.101 ug/Filter B Cadmium 0.215 ug/Filter B Chromium 5 ug/Filter Cobalt 0.2 ug/Filter U Copper 9.59 U ug/Filter Lead 0.742 J ug/Filter B Molybdenum 0.821 ug/Filter B Nickel 0.383 ug/Filter B Selenium 7.41 ug/Filter Silver 0.1 ug/Filter U Thallium 3.12 ug/Filter	Analyte Result Units C Qual Antimony 2.96 ug/Filter Arsenic 43.3 ug/Filter Barium 90 ug/Filter Beryllium 0.101 ug/Filter B Cadmium 0.215 ug/Filter B Chromium 5 ug/Filter Cobalt 0.2 ug/Filter U Copper 9.59 U ug/Filter Lead 0.742 J ug/Filter B Molybdenum 0.821 ug/Filter B Nickel 0.383 ug/Filter B Selenium 7.41 ug/Filter U Thallium 3.12 ug/Filter U Thallium	Analyte Result Units C Qual M Antimony 2.96 ug/Filter P Arsenic 43.3 ug/Filter P Barium 90 ug/Filter P Beryllium 0.101 ug/Filter B P Cadmium 0.215 ug/Filter B P Chromium 5 ug/Filter P Cobalt 0.2 ug/Filter U P Copper 9.59 U ug/Filter B P Molybdenum 0.821 ug/Filter B P Nickel 0.383 ug/Filter B P Selenium 7.41 ug/Filter P Silver 0.1 ug/Filter U P Thallium 3.12 ug/Filter P	Analyte Result Units C Qual M MDL Antimony 2.96 ug/Filter P 0.33 Arsenic 43.3 ug/Filter P 0.5 Barium 90 ug/Filter P 0.1 Beryllium 0.101 ug/Filter B P 0.1 Cadmium 0.215 ug/Filter B P 0.1 Chromium 5 ug/Filter P 0.1 Cobalt 0.2 ug/Filter P 0.2 Copper 9.59 U ug/Filter P 0.3 Lead 0.742 J ug/Filter B P 0.25 Molybdenum 0.821 ug/Filter B P 0.25 Nickel 0.383 ug/Filter B P 0.15 Selenium 7.41 ug/Filter P 0.5 Silver 0.1 ug/Filter U P 0.1 Thallium 3.12 ug/Filter P 0.5	Analyte Result Units C Qual M MDL DF Antimony 2.96 ug/Filter P 0.33 2 Arsenic 43.3 ug/Filter P 0.5 2 Barium 90 ug/Filter P 0.1 2 Beryllium 0.101 ug/Filter B P 0.1 2 Cadmium 0.215 ug/Filter B P 0.1 2 Chromium 5 ug/Filter B P 0.15 2 Cobalt 0.2 ug/Filter U P 0.2 2 Copper 9.59 U ug/Filter B P 0.3 2 Lead 0.742 J ug/Filter B P 0.25 2 Molybdenum 0.821 ug/Filter B P 0.15 2 Selenium 7.41 ug/Filter P 0.5 2 Silver	Analyte Result Units C Qual M MDL DE Instrument ID Antimony 2.96 ug/Filter P 0.33 2 OPTIMA1 Arsenic 43.3 ug/Filter P 0.5 2 OPTIMA1 Barium 90 ug/Filter P 0.1 2 OPTIMA1 Beryllium 0.101 ug/Filter B P 0.1 2 OPTIMA1 Cadmium 0.215 ug/Filter B P 0.1 2 OPTIMA1 Chromium 5 ug/Filter B P 0.15 2 OPTIMA1 Copper 9.59 U ug/Filter U P 0.2 2 OPTIMA1 Lead 0.742 J ug/Filter B P 0.25 2 OPTIMA1 Molybdenum 0.821 ug/Filter B P 0.25 2 OPTIMA1 Selenium 7.41 ug/Filter U

174 U ug/Pilter

-m/12/09

0.33

OPTIMA1 111109-2

7440-66-6

Zinc

SDG No: 239855

METHOD TYPE: SW846

SAMPLE ID: 239855006

CLIENT ID: SME-M-007

CONTRACT: ECOL00209

MATRIX:F		DATE RI	ECEIVED	27	'OCT)9	LEVEI	.: Low	%SOLIDS:	
CAS No	Analyte	Result	<u>Units</u>	<u>C</u>	Qual	M	MDL	DF	Instrument ID	Analytical Run
7440-36-0	Antimony	3.02	ug/Filter			P	0.33	2	OPTIMA1	1111092
7440~38~2	Arsenic	21.7	ug/Filter			P	0.5	2	OPTIMA1	111109-2
7440-39-3	Barium	184	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-41-7	Beryllium	2.27	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-43-9	Cadmium	1.03	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-47-3	Chromium	28.5	ug/Filter			P	0.15	2	OPTIMA1	111109-2
7440-48-4	Cobalt	1.07 J	ug/Filter			P	0.2	2	OPTIMA1	1111092
7440-50-8	Copper	328	ug/Filter			P	0.3	2	OPTIMA1	1111092
7439921	Lead	17.7 J	ug/Filter			P	0.25	2	OPTIMA1	111109-2
7439-98-7	Molybdenum	0.855	ug/Filter	В		P	0.2	2	OPTIMA1	111109-2
7440-02-0	Nickel	16.4	ug/Filter			P	0.15	2	OPTIMA1	1111092
7782-49-2	Selenium	6.09	ug/Filter			P	0.5	2	OPTIMA1	111109-2
7440-22-4	Silver	0.295	ug/Filter	В		P	0.1	2	OPTIMA1	111109-2
7440280	Thallium	1.78	ug/Filter	В		P	0.5	2	OPTIMA1	111109-2
7440-62-2	Vanadium	4.81	ug/Filter			P	0.1	2	OPTIMA1	1111092
7440-66-6	Zinc	311 U	ug/Filter			P	0.33	2	OPTIMA1	111109-2

12/2/09

SDG No: 239855

METHOD TYPE: SW846

SAMPLE ID: 239855007

CLIENT ID: SME-M-009

CONTRACT: ECOL00209

MATRIX:F		DATE R	ECEIVED	27	-OCT-	09	LEVE	L: Low	%SOLIDS:	
CAS No	<u>Analyte</u>	Result	Units	<u>C</u>	Qual	М	MDL	DF	Instrument. ID	Analytical Run
7440-36-0	Antimony	0.33	ug/Filter	U		P	0.33	2	OPTIMA1	111109-2
7440-38-2	Arsenic	2.5	ug/Filter	υ		P	2.5	10	OPTIMA1	111109-2
7440393	Barium	4.44	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-417	Beryllium	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	111109–2
7440-43-9	Cadmium	0.5	ug/Filter	U		P	0.5	10	OPTIMA1	111109–2
7440-47-3	Chromium	8.38	ug/Filter			P	0.15	2	OPTIMA1	1111092
7440-48-4	Cobalt	1.85 I	ug/Filter			P	0.2	2	OPTIMA1	111109-2
7440-50-8	Copper	11.6	ug/Filter			P	1.5	10	OPTIMA1	111109-2
7439-92-1	Lead	1.25	ug/Filter	υ		P	1.25	10	OPTIMA1	111109-2
7439987	Molybdenum	1	ug/Filter	U	•	P	1	10	OPTIMA1	111109-2
7440-02-0	Nickel	3.97	ug/Filter			P	0.15	2	OPTIMA1	111109-2
7782-49-2	Selenium	5.65	ug/Filter	В	,	P	2.5	10	OPTIMA1	111109-2
7440224	Silver	0.5	ng/Filter	U		P	0.5	10	OPTIMA1	111109-2
7440-28-0	Thallium	0.5	ug/Filter	U		P	0.5	2	OPTIMA1	111109-2
7440-62-2	Vanadium	1.67	ug/Filter	В		P	0.5	10	OPTIMA1	111109-2
7440-66-6	Zinc	114 <i>U</i>	ug/Filter			P	1.65	10	OPTIMA1	111109-2

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SDG No: 239855

METHOD TYPE: SW846

SAMPLE ID: 239855008

CLIENT ID: SME-M-015

CONTRACT: ECOL00209

MATRIX:F		DATE RI	CEIVED	27	'OCT	09	LEVEL: Lov		%SOLIDS:	
CAS No	Analyte	Result	<u>Units</u>	C	Qual	М	MDL	<u>DF</u>	Instrument ID	Analytical Run
7440-36-0	Antimony	0.33	ug/Filter	U		P	0.33	2	OPTIMA1	111109–2
7440-38-2	Arsenic	1.34	ug/Filter	В		P	0.5	2	OPTIMA1	111109-2
7440-39-3	Barium	8.2	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-41-7	Beryllium	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	111109-2
7440-43-9	Cadmium	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	111109~2
7440-47-3	Chromium	0.342	ug/Filter	В		P	0.15	2	OPTIMA1	111109-2
7440-48-4	Cobalt	0.449 T	ug/Filter	В		P	0.2	2	OPTIMA1	1111092
7440-50-8	Соррег	3.51 U	ug/Filter			P	0.3	2	OPTIMA1	111109-2
7439-92-1	Lead	0.25 🍑	ug/Filter	U		P	0.25	2	OPTIMA1	111109-2
7439-98-7	Molybdenum	0.29	ug/Filter	В		P	0.2	2	OPTIMA1	111109-2
7440-02-0	Nickel	0.15	ug/Filter	U		P	0.15	2	OPTIMA1	111109–2
7782-492	Selenium	1.37	ug/Filter	В		P	0.5	2	OPTIMA1	111109-2
7440-22-4	Silver	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	111109-2
7440-28-0	Thallium	0.5	ug/Filter	U		P	0.5	2	OPTIMA1	111109-2
7440-62-2	Vanadium	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	111109-2
7440–66–6	Zinc	116 U	ug/Filter			P	0.33	2	OPTIMA1	111109-2

SDG No: 239855

METHOD TYPE: SW846

SAMPLE ID: 239855009

CLIENT ID: SME-M-017

CONTRACT: ECOL00209

MATRIX:F		DATE R	DATE RECEIVED 27-OCT-09					L: Low	%SOLDS:		
CAS No	Analyte	Result	Units	C	Qual	М	MDL	<u>DF</u>	Instrument ID	Analytical Run	
7440-36-0	Antimony	1.11	ug/Filter			P	0.33	2	ОРТІМА1	111109-2	
7440-38-2	Arsenic	3.71	ug/Filter			P	0.5	2	OPTIMA1	111109-2	
7440393	Barium	41.1	ug/Filter			P	0.1 .	2	OPTIMA1	111109-2	
7440-41-7	Beryllium	0.793	ug/Filter			P	0.1	2	OPTIMA1	111109-2	
7440-43-9	Cadmium	0.164	ug/Filter	В		P	0.1	2	OPTIMA1	111109-2	
7440-47-3	Chromium	14.4	ug/Filter			P	0.15	2	OPTIMA1	111109-2	
7440-48-4	Cobalt	2.45 J	ng/Filter			P	0.2	2	OPTIMA1	111109-2	
7440-50-8	Copper	77.5	ug/Filter			P	0.3	2	OPTIMA1	111109-2	
7439-92-1	Lead	15 T	ug/Filter			P	0.25	2	OPTIMA1	111109-2	
7439–98-7	Molybdenum	1.51	ug/Filter			P	0.2	2	OPTIMA1	111109-2	
7440-02-0	Nickel	15.6	ug/Filter			P	0.15	2	OPTIMA1	111109-2	
7782-492	Selenium	3.52	ug/Filter			P	0.5	2	OPTIMA1	111109-2	
7440-22-4	Silver	0.273	ug/Filter	В		P	0.1	2	OPTIMA1	111109–2	
7440280	Thallium	0.5	ug/Filter	U		P	0.5	2	OPTIMA1	111109–2	
7440-62-2	Vanadium	2.33	ug/Filter			P	0.1	2	OPTIMA1	111109-2	
7440-66-6	Zinc	317 U	ug/Filter			P	0.33	2	OPTIMA1	111109-2	

SDG No: 239855

METHOD TYPE: SW846

SAMPLE ID: 239855010

CLIENT ID: SME-M-030

CONTRACT: ECOL00209

MATRIX:	MATRIX:F		DATE RECEIVED 27-OCT-09					L: Low	%SOLIDS:	
CAS No	Analyte	<u>Result</u>	<u>Units</u>	<u>C</u>	Qual	M	MDL	<u>DF</u>	Instrument ID	Analytical Run
7440-36-0	Antimony	0.33	ug/Filter	U		P	0.33	2	OPTIMA1	111109-2
7440-382	Arsenic	0.5	ug/Filter	U		P	0.5	2	OPTIMA1	111109-2
7440-39-3	Barium	6.76	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-41-7	Beryllium	0.261	ug/Filter	В		P	0.1	2	OPTIMA1	111109-2
7440-43-9	Cadmium	0.1	ug/Filter	υ		P	0.1	2	OPTIMA1	111109-2
7440-47-3	Chromium	0.502	ug/Filter			P	0.15	2	OPTIMA1	111109-2
7440-48-4	Cobalt	0.2	ug/Filter	U		P	0.2	2	OPTIMA1	111109-2
7440-50-8	Copper	2.1 U	ug/Filter			P	0.3	2	OPTIMA1	111109-2
7439-92-1	Lead	0.25	ug/Filter	U		P	0.25	2	OPTIMA1	111109-2
7439-98-7	Molybdenum	0.2	ug/Filter	U		P	0.2	2	OPTIMA1	111109-2
7440-02-0	Nickel	0.19	ug/Filter	В		P	0.15	2	OPTIMA1	111109-2
7782-49-2	Selenium	0.828	ug/Filter	В		P	0.5	2	OPTIMA1	111109-2
7440-22-4	Silver	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	111109-2
7440280	Thallium	0.5	ug/Filter	U		P	0.5	2	OPTIMA1	111109-2
7440-62-2	Vanadium	0.134	ug/Filter	В		P	0.1	2	OPTIMA1	111109-2
7440-66-6	Zinc	124 U	ug/Filter			P	0.33	2	OPTIMA1	111109-2

SDG No: 239855

METHOD TYPE: SW846

SAMPLE ID: 239855011

CLIENT ID: SME-M-031

CONTRACT: ECOL00209

MATRIX:F

DATE RECEIVED 27-OCT-09

LEVEL: Low %SOLIDS:

CAS No	Analyte	Result	Units	C	Qual	М	MDL	DE	Instrument ID	Analytical Run
7440-36-0	Antimony	2270	ug/Filter			P	1.65	10	OPTIMA1	111309-3
7440-38-2	Arsenic	12.5	ug/Filter			P	0.5	2	OPTIMA1	111109-2
7440-39-3	Barium	21	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-41-7	Beryllium	0.144	ug/Filter	В		P	0.1	2	OPTIMA1	111109–2
7440-43-9	Cadmium	1.81	ug/Filter			P	0.1	2	OPTIMA1	1111092
7440-47-3	Chromium	0.468	ug/Filter	В		P	0.15	2	OPTIMA1	111109-2
7440-48-4	Cobalt	0.2	ug/Filter	U		P	0.2	2	OPTIMA1	1111092
7440-50-8	Copper	3.37 U	ug/Filter			P	0.3	2	OPTIMA1	111109-2
7439-92-1	Lead	6.02 J	ug/Filter			P	0.25	` 2	OPTIMA1	111109-2
7439987	Molybdenum	0.358	ug/Filter	В		P	0.2	2	OPTIMA1	1111092
7440-02-0	Nickel	0.152	ug/Filter	В		P	0.15	2	OPTIMA1	111109-2
7782-49-2	Selenium	5.91	ng/Filter			$\mathbf{p}^{'}$	0.5	2	OPTIMA1	111109–2
7440-22-4	Silver	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	111109-2
7440-28-0	Thallium	0.5	ug/Filter	U		P	0.5	2	OPTIMA1	111109–2
7440-62-2	Vanadium	0.192	ug/Filter	В		P	0.1	2	OPTIMA1	111109-2
7440-66-6	Zinc	394 U	ug/Filter			P	0.33	2	OPTIMA1	111109-2

METALS
-1INORGANICS ANALYSIS DATA PACKAGE

METHOD TYPE: SW846

SAMPLE ID: 239855012

CLIENT ID: SME-M-032

CONTRACT: ECOL00209

MATRIX:F		DATE RI	DATE RECEIVED 27-OCT-09				LEVEL: Lov		%SOLIDS:	
CAS No	<u>Analyte</u>	Result	<u>Units</u>	<u>C</u>	Qual	M	MDL	DF	Instrument ID	Analytical Run
7440-36-0	Antimony	3.92	ug/Filter			P	0.33	2	OPTIMA1	111109-2
7440-38-2	Arsenic	4.67	ug/Filter			P	0.5	2	OPTIMA1	111109-2
7440-39-3	Barium	151	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440417	Beryllium	1.98	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-43-9	Cadmium	0.109	ug/Filter	В		P	0.1	2	OPTIMA1	111109-2
7440-47-3	Chromium	6.06	ug/Filter			P	0.15	2	OPTIMA1	111109-2
7440-48-4	Cobalt	0.515 エ	ug/Filter			P	0.2	2	OPTIMA1	111109-2
7440-50-8	Copper	15.5	ug/Filter			P	0.3	2	OPTIMA1	1111092
7439921	Lead	1.77 3	ug/Filter			P	0.25	2	OPTIMA1	111109-2
7439-98-7	Molybdenum	0.352	ug/Filter	В		P	0.2	2	OPTIMA1	111109-2
7440-02-0	Nickel	1.57	ug/Filter			P	0.15	2	OPTIMA1	111109-2
7782-49-2	Selenium	3.96	ug/Filter			P	0.5	2	OPTIMA1	111109-2
7440-22-4	Silver	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	111109-2
7440-28-0	Thallium	0.5	ug/Filter	U		P	0.5	2	OPTIMA1	111109-2
7440-62-2	Vanadium	1.33	ug/Filter			P	0.1	2	OPTIMA1	1111092
7440-66-6	Zinc	80.3 <i>U</i>	ng/Filter			P	0.33	2	OPTIMA1	1111092

SDG No: 239855

METHOD TYPE: SW846

SAMPLE ID: 239855013

CLIENT ID: BAG-M-001

CONTRACT: ECOL00209

MATRIX:F

DATE RECEIVED 27-OCT-09

LEVEL: Low %SOLIDS:

GARAN.	A 3 4	n14	YJušta		Oval		MIN	D17	Instrument	
CAS No	<u>Analyte</u>	Result	Units	C	<u>Qual</u>	M	MDL	<u>DF</u>	<u>m</u>	Run
7440-36-0	Antimony	3.3	ug/Filter	υ		P	3.3	20	OPTIMA1	111109-2
7440-38-2	Arsenic	8.58	ug/Filter	В		P	5	20	OPTIMA1	1111092
7440-39-3	Barium	7.78	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-41-7	Beryllium	1	ug/Filter	U		P	1	20	OPTIMA1	111109-2
7440-43-9	Cadmium	1	ug/Filter	U		P	1	20	OPTIMA1	111109-2
7440-47-3	Chromium	63	ug/Filter			P	0.15	2	OPTIMA1	111109-2
7440-48-4	Cobalt	8.85 T	ug/Filter			P	0.2	2	OPTIMA1	111109-2
7440-50-8	Copper	50.9	ng/Filter			P	3	20	OPTIMA1	111109–2
7439-92-1	Lead	2.5 2	ug/Filter	U		P	2.5	20	OPTIMA1	111109-2
7439-98-7	Molybdenum	3.43	ug/Filter	В		P	2	20	OPTIMA1	111109-2
7440-02-0	Nickel	30.5	ug/Filter			P	0.15	2	OPTIMA1	1111092
7782-49-2	Selenium	17.6	ug/Filter	В		P	5	20	OPTIMA1	1111092
7440-22-4	Silver	1.19	ug/Filter	В		P	1	20	OPTIMAI	111109-2
7440-28-0	Thallium	5	ug/Filter	U		P	5	20	OPTIMA1	111109-2
7440-62-2	Vanadium	7.34	ug/Filter			P	1	20	OPTIMA1	111109-2
7440-66-6	Zinc	107 U	ug/Filter			P	3.3	20	OPTIMA1	1111092

12/21.8

SDG No: 239855

METHOD TYPE: SW846

SAMPLE ID: 239855014

CLIENT ID: BAG-M-002

1.65

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CONTRACT: ECOL00209

CONTRA	C1. ECOEO0207									
MATRIX:	MATRIX:F		ECEIVEI	27	-OCT-	09	LEVE	L: Low	%SOLIDS:	
CAS No	Analyte	Result	Units	C	Qual	<u>M</u>	MDL .	<u>DF</u>	Instrument ID	Analytical Run
7440-36-0	Antimony	0.432	ug/Filter	В		P	0.33	2	OPTIMA1	111109-2
7440-38-2	Arsenic	3.72	ug/Filter	В		P	2.5	10	OPTIMA1	111109-2
7440-39-3	Barium	36.7	ug/Filter			P	0.1	2	OPTIMA1	1111092
7440-41-7	Beryllium	3.21	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-43-9	Cadmium	0.5	ug/Filter	U		P	0.5	10	OPTIMA1	111109-2
7440-47-3	Chromium	6.48	ug/Filter			P	0.15	2	OPTIMA1	111109-2
7440-48-4	Cobalt	4.26 J	ug/Filter			P	0.2	2	OPTIMA1	111109-2
7440-50-8	Copper	32.1	ug/Filter			P	1.5	10	OPTIMA1	111109-2
7439-92-1	Lead	1.64 ブ	ug/Filter	В		P	1.25	10	OPTIMA1	111109-2
7439-98-7	Molybdenum	1	ug/Filter	υ		P	. 1	10	OPTIMA1	111109-2
7440-02-0	Nickel	7.44	ug/Filter			P	0.15	2	OPTIMA1	111109-2
7782492	Selenium	13.6	ug/Filter	В		P	2.5	10	OPTIMA1	111109-2
7440-22-4	Silver	0.632	ug/Filter	В		P	0.5	10	OPTIMA1	111109-2
7440-28-0	Thallium	2,5	ug/Filter	U		P	2.5	10	OPTIMA1	111109-2
7440-62-2	Vanadium	2.25	ug/Filter	В		P	0.5	10	OPTIMA1	111109-2

161 U ug/Filter

12/2/-8

OPTIMA1 111109-2

7440-66-6

Zinc

SDG No: 239855

METHOD TYPE: SW846

SAMPLE ID: 239855015

CLIENT ID: BAG-M-003

CONTRACT: ECOL00209

MATRIX:F		DATE RI	ECEIVED	27	-OCT-()9	LEVEL: Low		%SOLIDS:	
CAS No	Analyte	Result	Units	c	Qual	M	MDL	DF	Instrument ID	Analytical Run
7440-36-0	Antimony	3.3	ug/Filter	U		P	3.3	20	OPTIMA1	111109–2
7440-38-2	Arsenic	5.62	ug/Filter	В		P	5	20	OPTIMA1	111109-2
7440-39-3	Barium	5.16	ug/Filter			P	0.1	. 2	OPTIMA1	111109-2
7440-41-7	Beryllium	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	111109-2
7440-43-9	Cadmium	1	ug/Filter	U		P	1 '	20	OPTIMA1	111109-2
7440473	Chromium	26	ug/Filter			P	0.15	2	OPTIMA1	111109-2
7440-48-4	Cobalt	3.51 J	ng/Filter			P	0.2	2	OPTIMA1	111109-2
7440-50-8	Copper	45.9	ug/Filter			P	3	20	OPTIMA1	111109-2
7439-92-1	Lead	2.5 📆	ug/Filter	U		P	2.5	20	OPTIMA1	111109-2
7439-98-7	Molybdenum	6.44	y ug/Filter	В		P	2	20	OPTIMA1	111109-2
7440020	Nickel	7.33	ug/Filter			P	0.15	2	OPTIMA1	111109-2
7782-49-2	Selenium	13	ug/Filter	В	4	P	5 .	20	OPTIMA1	111109–2
7440-22-4	Silver	1	ug/Filter	U		P	1	20	OPTIMA1	111109-2
7440-28-0	Thallium	5	ug/Filter	U		P	5	20	OPTIMA1	111109-2
7440-62-2	Vanadium	6.68	ug/Filter			P	1	20	OPTIMA1	111109-2
7440-66-6	Zinc	111 V	ug/Filter			P	3.3	20	OPTIMA1	111109-2

SDG No: 239855

METHOD TYPE: SW846

SAMPLE ID: 239855016

CLIENT ID: BAG-M-004

CONTRACT: ECOL00209

MATRIX:	F	DATE R	ECEIVEL	27	'–OCT⊣	09	LEVEL: Lov		%SOLIDS:	
CAS No	Analyte	Result	Units	C	Qual	М	MDL	DF	Instrument ID	Analytical Run
7440-36-0	Antimony	1.44	ug/Filter			P	0.33	2	OPTIMA1	1111092
7440-38-2	Arsenic	6.72	ug/Filter	В		P	5	20	OPTIMA1	111109-2
7440-39-3	Barium	13.2	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-41-7	Beryllium	0.209	ug/Filter	В		P	0.1	2	OPTIMA1	111109-2
7440-43-9	Cadmium	1	ug/Filter	U		P	1	20	OPTIMA1	111109-2
7440-473	Chromium	55	ng/Filter			P	0.15	2	OPTIMA1	111109-2
7440-48-4	Cobalt	13.6 J	ug/Filter			P	0.2	2	OPTIMA1	1111092
7440-50-8	Copper	677	ug/Filter			P	3	20	OPTIMA1	111109-2
7439-92-1	Lead	2.5	ug/Filter	U		P	2.5	20	OPTIMA1	111109-2
7439-98-7	Molybdenum	27.3	ug/Filter			P	2 .	20	OPTIMA1	111109-2
7440-02-0	Nickel	232	ug/Filter			P	0.15	2	OPTIMA1	111109-2
7782-49-2	Selenium	9.45	ug/Filter	В		P	5	20	OPTIMA1	111109-2
7440-22-4	Silver	1.3	ug/Filter	В		P	1	20	OPTIMA1	111109-2
7440-28-0	Thallium	5	ug/Filter	U		P	5	20	OPTIMA1	111109-2
7440-62-2	Vanadium	2.63	ug/Filter	В		P	1	20	OPTIMA1	111109-2
7440-66-6	Zinc	151 U	ug/Filter			P	3.3	20	OPTIMA1	111109-2

SDG No: 239855

METHOD TYPE: SW846

SAMPLE ID: 239855017

CLIENT ID: BAG-M-005

CONTRACT: ECOL00209

MATRIX:F

DATE RECEIVED 27-OCT-09

LEVEL: Low %SOLIDS:

CAS No	Analyte	Result Units C C	Qual M	MDL	DF	Instrument ID	Analytical Run
7440–36–0	Antimony	4.54 J ug/Filter	P	0.33	2	OPTIMA1	111109-2
7440-38-2	Arsenic	3.88 ug/Filter	P	0.5	2	OPTIMA1	111109-2
7440393	Barium	164 ug/Filter	P	0.1	2	OPTIMA1	111109-2
7440-41-7	Beryllium	1.98 ug/Filter	P	0.1	2	OPTIMA1	111109-2
7440-43-9	Cadmium	0.527 ug/Filter	P	0.1	2	OPTIMA1	111109-2
7440-47-3	Chromium	8.13 Jug/Filter	P	0.15	2	OPTIMA1	1111092
7440-48-4	Cobalt	0.676 ブ ug/Filter	P	0.2	2	OPTIMA1	1111092
7440-50-8	Copper	55.7 Jug/Filter	P	0.3 ·	2	OPTIMA1	111109-2
7439-92-1	Lead	16.1 Jug/Filter	P	0.25	2	OPTIMA1	111109-2
7439-98-7	Molybdenum	0.485 Jug/Filter B	P	0.2	2	OPTIMA1	111109-2
7440-02-0	Nickel	6.13 ug/Filter	P	0.15	2	OPTIMA1	111109-2
7782-49-2	Selenium	2.07 ug/Filter B	P	0.5	2	OPTIMA1	111109-2
7440-22-4	Silver	0.218 ug/Filter B	P	0.1	2	OPTIMA1	111109-2
7440-28-0	Thallium	0.5 ug/Filter U	P	0.5	2	OPTIMA1	111109-2
7440-62-2	Vanadium	2.72 ブ ug/Filter	P	0.1	2	OPTIMA1	111109-2
7440-66-6	Zinc	2080ブ ug/Filter	P	0.825	5	OPTIMA1	111309-3

SDG No: 239855

METHOD TYPE: SW846

SAMPLE ID: 239855018

CLIENT ID: BAG-M-1005

CONTRACT: ECOL00209

MATRIX:F

DATE RECEIVED 27-OCT-09

LEVEL: Low %SOLIDS:

CAS No	Analyte	Result	<u>Units</u>	C	Qual	M	MDL	DF	Instrument ID	<u>Analytical</u> <u>Run</u>
7440-36-0	Antimony	9.45	ug/Filter			P	0.33	2	OPTIMA1	1111092
7440-38-2	Arsenic	7.86	ug/Filter			P	0.5	2	OPTIMA1	111109-2
7440393	Barium	221	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-417	Beryllium	3.44	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-43-9	Cadminm	1.49	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-47-3	Chromium	16.9 ↓	ug/Filter			P	0.15	2	OPTIMA1	111109-2
7440-48-4	Cobalt	1.25 J	ug/Filter			P	0.2	2	OPTIMA1	1111092
7440-50-8	Copper	113 🕽	ng/Filter			P	0.3	2	OPTIMA1	111109-2
7439-92-1	Lead	33.2 [ug/Filter			P	0.25	2	OPTIMA1	111109-2
7439-987	Molybdenum	0.917	ug/Filter	В		P	0.2	2	OPTIMA1	111109-2
7440-02-0	Nickel	12.7	ug/Filter			P	0.15	2	OPTIMA1	111109-2
7782-49-2	Selenium	4,43	ug/Filter			P	0.5	2	OPTIMA1	111109-2
7440224	Silver	0.412	ug/Filter	В		P	0.1 ,	2	OPTIMAI	111109-2
7440-28-0	Thallium	0.544	ug/Filter	В		·P	0.5	2	OPTIMA1	111109-2
7440-62-2	Vanadium	4.88	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-66-6	Zinc	4740 🗸	ug/Filter			P	1.65	10	OPTIMA1	111309-3

SDG No: 239855

METHOD TYPE: SW846

SAMPLE ID: 239855019

CLIENT ID: BAG-M-009

CONTRACT: ECOL00209

MATRIX:F

DATE RECEIVED 27-OCT-09

LEVEL: Low %SOLIDS:

<u>Analyte</u>	Result	Units	Ç	Qual	M	MDL	DF	Instrument_ ID	Analytical Run
Antimony	1.17	ug/Filter	•		P	0.33	2	OPTIMA1	111109–2
Arsenic	5.16	ug/Filter	-		P	0.5	2	OPTIMA1	111109-2
Barium	105	ug/Filter			P	0.1	2	OPTIMA1	111109-2
Beryllium	1.56	ug/Filter	•		P	0.1	2	OPTIMA1	111109-2
Cadmium	0.173	ug/Filter	В		P	0.1	2	OPTIMA1	111109-2
Chromium	6.09	ng/Filter			P	0.15	2	OPTIMA1	111109-2
Cobalt	3.33 ፲	ug/Filter			P	0.2	2	OPTIMA1	111109-2
Copper	27.2	ug/Filter			P	0.3	2	OPTIMA1	111109-2
Lead	4.91 T	ug/Filter			P	0.25	2	OPTIMA1	111109-2
Molybdenum	0.2	ug/Filter	U		P	0.2	2	· OPTIMA1	111109-2
Nickel	4.03	ug/Filter			P	0.15	2	OPTIMA1	1111092
Selenium	3,46	ug/Filter			P	0.5	2	OPTIMA1	1111092
Silver	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	111109-2
Thallium	0.5	ug/Filter	U		P	0.5	2	OPTIMA1	1111092
Vanadium	1.7	ug/Filter			P	0.1	2	OPTIMA1	111109-2
Zinc	205 U	ug/Filter			P	0.33	2	OPTIMA1	111109-2
	Antimony Arsenic Barium Beryllium Cadmium Chromium Cobalt Copper Lead Molybdenum Nickel Selenium Silver Thallium Vanadium	Antimony 1.17 Arsenic 5.16 Barium 105 Beryllium 1.56 Cadmium 0.173 Chromium 6.09 Cobalt 3.33 T Copper 27.2 Lead 4.91 T Molybdenum 0.2 Nickel 4.03 Selenium 3.46 Silver 0.1 Thallium 0.5 Vanadium 1.7	Antimony 1.17 ug/Filter Arsenic 5.16 ug/Filter Barium 105 ug/Filter Beryllium 1.56 ug/Filter Cadmium 0.173 ug/Filter Chromium 6.09 ug/Filter Cobalt 3.33 T ug/Filter Copper 27.2 ug/Filter Lead 4.91 T ug/Filter Molybdenum 0.2 ug/Filter Nickel 4.03 ug/Filter Nickel 4.03 ug/Filter Selenium 3.46 ug/Filter Silver 0.1 ug/Filter Thallium 0.5 ug/Filter Vanadium 1.7 ug/Filter	Antimony 1.17 ug/Filter Arsenic 5.16 ug/Filter Barium 105 ug/Filter Beryllium 1.56 ug/Filter Cadmium 0.173 ug/Filter B Chromium 6.09 ug/Filter Cobalt 3.33 T ug/Filter Copper 27.2 ug/Filter Lead 4.91 T ug/Filter Molybdenum 0.2 ug/Filter U Nickel 4.03 ug/Filter Selenium 3.46 ug/Filter U Thallium 0.5 ug/Filter U Vanadium 1.7 ug/Filter	Antimony 1.17 ug/Filter Arsenic 5.16 ug/Filter Barium 105 ug/Filter Beryllium 1.56 ug/Filter Cadmium 0.173 ug/Filter B Chromium 6.09 ug/Filter Cobalt 3.33 T ug/Filter Copper 27.2 ug/Filter Lead 4.91 T ug/Filter Molybdenum 0.2 ug/Filter Molybdenum 0.2 ug/Filter Selenium 3.46 ug/Filter Silver 0.1 ug/Filter U Thallium 0.5 ug/Filter U Vanadium 1.7 ug/Filter	Antimony 1.17 ug/Filter P Arsenic 5.16 ug/Filter P Barium 105 ug/Filter P Beryllium 1.56 ug/Filter P Cadmium 0.173 ug/Filter B P Chromium 6.09 ug/Filter P Cobalt 3.33 T ug/Filter P Copper 27.2 ug/Filter P Lead 4.91 T ug/Filter P Molybdenum 0.2 ug/Filter P Nickel 4.03 ug/Filter P Selenium 3.46 ug/Filter P Silver 0.1 ug/Filter U P Thallium 0.5 ug/Filter U P Vanadium 1.7 ug/Filter P	Antimony 1.17 ug/Filter P 0.33 Arsenic 5.16 ug/Filter P 0.5 Barium 105 ug/Filter P 0.1 Beryllium 1.56 ug/Filter P 0.1 Cadmium 0.173 ug/Filter B P 0.1 Chromium 6.09 ug/Filter P 0.15 Cobalt 3.33 T ug/Filter P 0.2 Copper 27.2 ug/Filter P 0.3 Lead 4.91 T ug/Filter P 0.25 Molybdenum 0.2 ug/Filter P 0.15 Selenium 3.46 ug/Filter P 0.15 Selenium 3.46 ug/Filter U P 0.1 Thallium 0.5 ug/Filter U P 0.5 Vanadium 1.7 ug/Filter P 0.1	Antimony 1.17 ug/Filter P 0.33 2 Arsenic 5.16 ug/Filter P 0.5 2 Barium 105 ug/Filter P 0.1 2 Beryllium 1.56 ug/Filter P 0.1 2 Cadmium 0.173 ug/Filter B P 0.1 2 Chromium 6.09 ug/Filter P 0.15 2 Cobalt 3.33 T ug/Filter P 0.2 2 Copper 27.2 ug/Filter P 0.3 2 Lead 4.91 T ug/Filter P 0.25 2 Molybdenum 0.2 ug/Filter P 0.2 2 Nickel 4.03 ug/Filter P 0.5 2 Selenium 3.46 ug/Filter P 0.5 2 Silver 0.1 ug/Filter U P 0.5 2 Thallium 0.5 ug/Filter U P 0.5 2 Vanadium 1.7 ug/Filter U P 0.5 2	Antimony 1.17 ug/Filter P 0.33 2 OPTIMA1 Arsenic 5.16 ug/Filter P 0.5 2 OPTIMA1 Barium 105 ug/Filter P 0.1 2 OPTIMA1 Beryllium 1.56 ug/Filter P 0.1 2 OPTIMA1 Cadmium 0.173 ug/Filter B P 0.1 2 OPTIMA1 Chromium 6.09 ug/Filter P 0.15 2 OPTIMA1 Cobalt 3.33 x ug/Filter P 0.2 2 OPTIMA1 Copper 27.2 ug/Filter P 0.3 2 OPTIMA1 Lead 4.91 x ug/Filter P 0.25 2 OPTIMA1 Molybdenum 0.2 ug/Filter P 0.2 2 OPTIMA1 Nickel 4.03 ug/Filter P 0.15 2 OPTIMA1 Nickel 4.03 ug/Filter P 0.15 2 OPTIMA1 Selenium 3.46 ug/Filter P 0.15 2 OPTIMA1 Silver 0.1 ug/Filter P 0.5 2 OPTIMA1 Thallium 0.5 ug/Filter U P 0.1 2 OPTIMA1 Thallium 0.5 ug/Filter U P 0.5 2 OPTIMA1 Vanadium 1.7 ug/Filter U P 0.5 2 OPTIMA1

METALS
-1INORGANICS ANALYSIS DATA PACKAGE

METHOD TYPE: SW846

SAMPLE ID: 239855020

CLIENT ID: BAG-M-015

CONTRACT: ECOL00209

MATRIX:F

DATE RECEIVED 27-OCT-09

LEVEL: Low %SOLIDS:

CAS No	<u>Analyte</u>	Result	<u>Units</u>	C	Qual	М	MDL	DF	<u>Instrument</u> <u>ID</u>	Analytical Run
7440360	Antimony	0.959	ug/Filter	В		P	0.33 .	2	OPTIMA1	1111092
7440-38-2	Arsenic	3.42	ug/Filter			P	0.5	2	OPTIMA1	111109-2
7440-39-3	Barium	27.8	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440-41-7	Beryllium	0.283	ug/Filter	В		P	0.1	2	OPTIMA1	111109-2
7440-43-9	Cadmium	0.133	ug/Filter	В		P	0.1	2	OPTIMA1	1111092
7440-47-3	Chromium	3,29	ug/Filter			P	0.15	2	OPTIMA1	111109-2
7440-48-4	Cobalt	1.49 🎞	ug/Filter			P	0.2	2	OPTIMA1	111109-2
7440-50-8	Copper	13.3	ug/Filter			P	0.3	2	OPTIMA1	111109-2
7439-92-1	Lead	2.34 丁	ug/Filter			P	0.25	2	OPTIMA1	1111092
7439-98-7	Molybdenum	0.445	ug/Filter	В		P	0.2	2	OPTIMA1	111109-2
7440-02-0	Nickel	1.26	ug/Filter			P	0.15	2	OPTIMA1	111109-2
7782-49-2	Selenium	0.521	ug/Filter	В		P	0.5	2	OPTIMA1	111109-2
7440-22-4	Silver	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	111109-2
7440-28-0	Thallium	1.64	ug/Filter	В		P	0.5	2	OPTIMA1	111109–2
7440-62-2	Vanadium	0.758	ug/Filter			P	0.1	2	OPTIMA1	111109-2
7440666	Zinc	131 U	ug/Filter			P	0.33 ·	2	OPTIMA1	1111092

METALS
-1INORGANICS ANALYSIS DATA PACKAGE

METHOD TYPE: SW846

SAMPLE ID: 239855021

CLIENT ID: BAG-M-1015

CONTRACT: ECOL00209

MATRIX:F		DATE RI	CEIVED	27	-OCT-0	9	LEVEL	: Low	%SOLIDS:	
CAS No	Analyte	Result	Units	C	Qual	М	MDL	DF	Instrument ID	Analytical Run
7440-36-0	Antimony	0.806	ug/Filter	В		P	0.33	2	OPTIMA1	110909B-1
7440-38-2	Arsenic	4.09	ug/Filter			P	0.5	2	OPTIMA1	110909B-1
7440-39-3	Barium	37.5	ug/Filter			P	0.1	2	OPTIMA1	110909B-1
7440-417	Beryllium	0.249	ug/Filter	В		P	0.1	2	OPTIMA1	110909B-1
7440-43-9	Cadmium	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	110909B-1
7440-47-3	Chromium	2.6	ug/Filter			P	0.15	2	OPTIMA1	110909B-1
7440484	Cobalt	0.932 ブ	ug/Filter			P	0.2	2	OPTIMA1	110909B-1
7440-50-8	Copper	9.88	ug/Filter			P	0.3	2	OPTIMA1	110909B-1
7439-92-1	Lead	1.55 J	ug/Filter			P	0.25	2	OPTIMA1	110909B-1
7439-987	Molybdenum	0.514	ug/Filter	В		P	0.2	2	OPTIMA1	110909B-1
7440-02-0	Nickel	1.03	ug/Filter			P	0.15	2	OPTIMA1	110909B-1
7782-49-2	Selenium	0.614	ug/Filter	В		P	0.5	2	OPTIMA1	110909B-1
7440-22-4	Silver	0.1	ug/Filter	U		P	0.1	2	OPTIMA1	110909B-1
744028-0	Thallium	1.71	ug/Filter	В		P	0.5	2	OPTIMA1	110909B1
7440-62-2	Vanadium	0.701	ug/Filter			P	0.1	2	OPTIMA1	110909B-1
7440–66–6	Zinc	129 U	ug/Filter			P	0.33	2	OPTIMA1	110909B-1

12/21-9

METALS -3bPREPARATION BLANK SUMMARY

SDG NO.

239855

Contract:

ECOL00209

Matrix:

FILTER

Sample ID	Analyte	Result	<u>Units</u>	Acceptance Window	Conc Qual	M	MDL	RDL
1201960520	-							
	Antimony	0.33	ug/Filter	+/-1.0	U	P	0.33	1
•	Arsenic	0.605	ug/Filter	+/3.0	В	P	0.5	3
	Barium	0.1	ug/Filter	+/0.5	U	P	0.1	0.5
	Beryllium	0.1	ug/Filter	+/-0.5	U	P	0.1	0.5
•	Cadmium	0.1	ug/Filter	+/0.5	U	P	0.1	0.5
	Chromium	0.15	ug/Filter	4 / - 0.5	Ū	P	0.15	0.5
	Cobalt	0.2	ug/Filter	+/-0.5	U	P	0.2	0.5
	Copper	0.3	ug/Filter	+/-1.0	U	P	0.3	1
	Lead	0.25	ug/Filter	+/-1.0	U	P	0.25	1
	Molybdenum	0.2	ug/Filter	+/-1.0·	U	P	0.2	1
	Nickel	0.15	ng/Filter	+/0.5	U	P	0.15	0.5
	Selenium	0.858	ug/Filter	+/-3.0	В	P	0.5	3
	Silver	0.1	ug/Filter	+/-0.5	U	P	0.1	0.5
	Thallium	-0.804	ug/Filter	+/-2.0	В	P	0.5	2
	Vanadium	0.1	ug/Filter	+/-0.5	υ	P	0.1	0.5
	Zinc	0.33	ug/Filter	+/-1.0	Ū	P	0.33	1
1201960549								
	Antimony	0.33	ug/Filter	+/1.0	\cdot \mathbf{n}	P	0.33	1
	Arsenic	0.771	ug/Filter	+/3.0	В	P	0.5	3
	Barium	0.1	ug/Filter	+/0.5	U	P	0.1	0.5
	Beryllium	0.1	ug/Filter	+/-0.5	U	P	0.1	0.5
	Cadmium	0.1	ug/Filter	+/-0.5	U	P	0.1	0.5
	Chromium	0.15	ug/Filter	+/-0.5	U	P	0.15	0.5
	Cobalt	0.2	ug/Filter	+/-0.5	U	P	0.2	0.5
	Copper	0.3	ug/Filter	+/-1.0	Ù	P	0.3	1
	Lead	0.322	ug/Filter	+/-1.0	$\cdot \mathbf{B}$	P	0.25	1
	Molybdenum	0.2	ng/Filter	+/1.0	U	P	0.2	1
	Nickel	0.15	ug/Filter	+/-0.5	U	P	0.15	0.5
	Selenium	0.5	ug/Filter	+/-3.0	υ	P	0.5	3
	Silver	-0.168	ug/Filter	+/-0.5	В	P	0.1	0.5
	Thallium	0.5	ug/Filter	+/-2.0	U	P	0.5	2
	Vanadium	0.1	ug/Filter	+/-0.5	υ	P	0.1	0.5
	Zinc	0.33	ug/Filter	+/-1.0	U	P	0.33	1

12/2/-9

1		7,007	2007105 1865.	£ 7.		
Project #: 002693, 2053, 01711125 GEL Quote #:	GEL Chain	of Custody	7 and A	of Custody and Analytical Request	GEL Laboratorics, LLC 2040 Savage Road Charleston SC 29407	
COC Number (1). PO Number:	GEL Work Order Number:	234855	55	•	Phone: (843) 556-8171 Fax: (843) 766-1178	171
Client Name: Ecology and Environment	nt Inc Phone	Ψ,	00	Sample Analysis Requested (5)	(Fill in the number of	(Fill in the number of containers for each test)
Project/Site Name: Halaco Duiching assessment	ESSUENT Fax#:	#: 522-391-4986		1		< Preservative Type (6)
Address: 3 for Injustry AVE "Hall Areway, CA	Whole to down			SULISI WV.		
Collected by: Ath	Send Results To: Phong	CNC. COM	:	10 199 10 199		Comments Note: extra sample is
Sample ID	*Date Collected Col	Time Collected QC Code Field (Miliary) (2) Filered	Filtered D Matrix (4	Mul Bate Age of		required for sample specific QC
BLK-0	1	(Gamen) 1500 TB	Δ.	и ~		
Bck-02.	10/22/01 070	81 og	ام	X		Cond the
SME-M-001	0189 69/22/01	N OI	A	× -		Verults to
-200-W-JWS	H01 6/22/91	N H	Δ	× -		
500-W-ANS	10/22/01	1116 N	Δ-	×		M SONT WENGEN
SME-M-OOF	11 10/22/01	1136 N	ď	\		P ·
SME-M-009	[0]25/01 115	50 N	A_	\ \times_{=}^{-}	,	
Sue-M-015	10/22/01	1415 N	Δ.	X -		
SuE-M-017	10/22/01	1432 N	۵	 		
SME-M-030	10/22/01	N 8121	Δ	× -		(
TAT Requested Normal; Specify	· (Subject to Surcharge)	Fax Results: Yes	/	No Circle Deliverable: CofA / Q	/ QC Summary / Level 1	/ Level 1 / Level 2 / Level 3 // Level 4
y karown	ble to these samples? If.	so, please list the ha	zards			offection Time Zone
No Hy for air	for wife samples on	7/ u		-	Central	Ι,
	Chain of Custody Signatures			Sample S	Sample Shipping and Delivery Details	Details
Relinquished By (Signed) Data Time	Received by (signed)	Date Time		GEL PM:		
1530	1. (L.M. XXEU) en	in 10/27/00	900	Method of Shipment Feb &	. Date Shipped:	10/26/09
2	2	- - -		Arribits #: 8692 - 5163	-1490	
	m			A 114:14		

2.) QC Codes: N = Normal Sampic, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sampic, MSD = Matrix Spike Duplicate Sampic, G = Grab, C = Composite
3.) Field Fillered: For liquid natrices, indicate with a - Y - for yea the sample was field filtered or - N - for sumpic was not field filtered.

4.) Matrix Codes: DW=Drinking Water, GW=Groundwater, SW-Surface Water, WW-Water, W-Water, W-Water, SD-Stellinen, SL-Studge, SS-Studge, SS-Studg

Custady Seal Intact?

oolerTemp: S

ecres of the Environ	:					II y ci	GEL Chain of Custody and Analytical Request	gne	Ļ	2040 S	2040 Savage Road		
Ecoropy was	GEL Work Order Number:	ber:						1		Charle: Phone:	Charleston, SC 29407 Phone: (843) 556-8171 Exer. (843) 755, 1178	7 17	
_	٠	Phone #:				Sam	Sample Analysis Requested (5)	is Reque		(Fill in the r	number of co	(Fill in the number of containers for each test)	
Project/Site Name:	,	Fax#:			Should this	<u> </u>		_				- Presentation	9
Address;					sample be considered:							(o) add vance (b)	(o) ad (c)
Collected by: 12-c	Send Results To: MSong	O CAC.	COM		pəi	1	41 24131 3919	- <u>- </u>				Comments	nts
	*Date Collected	{-··										required for sample is	ample is
Sample ID For composites - indicate start and stop date/time	(ж-рр-шш)	(Military) (Athum)	QC Code Field (a) Filtered PI	Sample Matrix 49	Radioact	r ledol	N N Peder Felsy					specific QC	8
SME-M-031.	10/22/01	1419	2	A	 	 	X	-					
SME-M-032	L9/22/01	5271	z	Δ	-	-							
Brg-M-001	10/11/01	SISI	ア	<i>∽</i>	-		X						
B4-M-002	10/21/09	5251	7	۵		-	X	<u> </u>					
B44-M-003	19/21/07	ohsj	フ ス	Δ			\ \	-	_				
BAG-M-064	10/21/09	1610	Z	Δ		_	\ \ \						
B4-M-005	10/22/09	SoS)	ュ	۵.	ļ		7	_	<u> </u>				
BAG-M-1005	(0/22/0)	t051	욘	ρ.		<u> </u>	\footnote{\sqrt{\sq}}\sqrt{\sq}}}}}}}}\sqrt{\sqrt{\sq}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}		-				
Brg-M-007	10/22/01	1545	マ	۵			×						
BG-11-015	10/22/07		7. C.	A-		_	X		_				
TAT Requested Normal Specify: Specify:	y: (Subject to Surcharge) Fax Results:	nge) Fax Res	ults: Yes	,	2) 	Circle Deliverable: C of A / OC Summary	ble: C of	7 7	Summary	1 1 1 1		
Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards	able to these samples	? If so, plea	rse list the ha	zards	• .						Sample C Eastern	Sample Collection Time Zone Eastern Pacific	Level 4
			-								Mountain		
Chain of Burgings Tree	Chain of Custody Signatures				_			Sa	mple Sh	ipping and	Sample Shipping and Delivery Details	tails	
and (totales) for national	Necessary of Car	,	Coffe Time		띵	GEL PM:							
15/4) 1330	ואשר איז	Tollling	102709	A 900		Method of Shipment:	pment			Date Shipped:	nipped:		
27	2	0	-		Airb	Airbill #:						W	
1) Chair of Country Munka - Office Manager	13				Airb	Airbill #:							
) Comm. w. Casador Natroet. Catentinana. 2.) QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, C = Grab, C = Composite. 3.) Field Filtered: For liquid matrices, indicate with a - Y - for yea the sample was field filtered or - N - for sample was not field filtered.	sicate, EB ~ Equipment Blank, sample was field filtered or - N	MS = Matrix Sp - for sample was	ik, MS = Matrix Spike Sample, MSD = N = for sample was not field filtered.	• Matrix Spike	Duplicate S	ample, G	- Grab, C = Co	mposite				For Lab Receiving Use Only	se Only
4) Matrix Codex DW-Drinking Water, GW-Groundwater, SW-Surface Water, WW-Water, Wo-Water, SO-Soll, SD-Sediment, SL-Sludge, SS-Solid Water, O-Oil, F-Filler, P-Wipe, U-Urine, F-Feral, N-Nexal S, Sample Analysis Requested: Analysis and requested (i.e. \$2608, 6010B/470A) and number of containers provided for each (i.e. \$2608 - 3, 6010B/470A - 1).	face Water, WW-Waste Waler, 10B, 6010B/7470A) and number	We Water, SO= of containers pre	Soll, SD=Sediment, svided for each (Le.	SL-Sludge, S 8260B - 3, 64	NOB/7470A	15fe, 0-0i - 1),	l, F-Filler, P=1	Wipe, D≔Ur.	ine, PoFeca	t N-Nexal		Custody Seal Intact? (FES) NO	O cat?
6.) Preservative (1985: HA = hydrochloric Acid, NI = Nither Acid, SI = Solidaric Acid, AA = Assorbite Acid, HX = Hexane, ST = Sodium Thissulfate, If the preservative is added = kenve field blank WHITE = LABORATORY WHITE = LABORATORY	= Nitre Acid, SH = Sodium Hydroxide, SA = Sul! WHITE = LABORATORY	furic Acid, AA = Y	= Asscorbic Acid, HX = He YELLOW = FILE	C - Hexane, ST T.C.E.	r ≈ Sodium	Thiesulfate PTN1	icsulfate, If no preservative PINK = CL. IFNT	alive is adde	d = !cave fie	sid blank	_	0	

(4/2 /(m)) 29855014000

Project #: 002693. 2053.01.124 05	GEL Ch	ain of	Cust	ain of Custody and Analytical Request	īd A	nak	fical	Reg	nect		GEL Laboratories,	GEL Laboratories, LLC	Ų	
GEL Quote #: COC Number (f).				.				}	3	-	Charlestor	Charleston, SC 29407		
	GEL Work Order Number:	1	234856	356			-				Phone: (84	Phone: (843) 556-8171 Fav: (843) 766 1170	₽4	
Client Name: Ecology 4-0 Envilon	ENVIRONATING TING	.Phone #:	•		٠	<i>3</i> 3	Sample Analysis Requested	nalysis]	equeste	CEIII	in the nun	aber of cor	(Fill in the number of containers for each test)	
Project/Site Name:		Fax #;			Should this		(7)	D'U	7	12	-	_	S. Precentative Type (6)	Tune (6)
Address:					considered:		(S)	() () 1	23/15) (2)				(a) 2dc.
Collected by: Send F	Send Results To: MS*N.	Spent.con	207			_	901.0E	09 NS10					Comments Note: extra comple is	its .
Samule II	*Date Collected	Collected		Field Samp		ejugə H				5W/			required for sample	ample is
* For composites - indicate start and stop date/time	(mm-dd-yy)	(Military) (hhmm)	E.	Fillered (2) Matrix (4)	.€		EPA Total	193 193	SVH	WZ			specific QC	ည
B46-M-1015	16/22/01	£0£]	£	A			X						*	I.
J.SME-5-001	10/22/09	0310	z	aS	_		7	X						train 1
SME-5-002	10/23/09	1030	2	20			X	X	X	X	-	_	300 100	7
SWE-5-003	10/23/01	1035	z	52		 ``	X	X	X		+		5 2 2	1
SME-5-1003	10/23/09	1037	8	S		N	X	X	X	X			1 / 1/40-14	
SME-5-004	10/22/01	0830	2	25		-	X	-			-			
) SME -S-00S	10/23/09	1042	2	Sp		,	X	X			'			
SME -5-006	10/12/01	1110	.2	50			X		X					
B46-5-001	10/23/01	0400	z	50			×	X	X	X				
849-5-002	10/22/01	5507	マ	S			X	X	X	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	-			
TAT Requestad: Normal Rush: Specify: (Subject to Surcharge) Fax Results: Yes	(Subject to Surcha	rge) Fax Re	sults:	Yes /	ž		Circle Deliverable: C of A	iverable		/ OC Summary] ~	Level 1	/ Tovel / Tenel 3 //	
Kemarks: Are there any known hazards applicab	ile to these samples	? If so, ple	ase list t	he hazards	,						.]	Sample C	Sample Collection Time Zone	
8015M for 1/14/ Viese #1	7.65x 21	Moderai	Cio.				•					Central	offer	
	Chain of Custody Signatures								Samo	e Shinnir	g and De	Sample Shinning and Delivery Devils	0.170	
Relinquished By (Signed) Date Time	Received by (signed)	(paul	Date	Time		GEL PM:	;							
1340 1926.	KM. W	The same	102	Jes 900	0	Method	Method of Shipment:				Date Shinned:	- i		
2	, ₂	0	-	•		Airbill #:						ŀ		
ñ	3					Airbill #:								
 Chain of Custody Number = Client Determined QC Codes: N = Normal Sample, TB = Trip Birnk, FD = Frield Duplicate, EB = Equipment Blank. 	ate, EB " Equipment Blank,	MS - Matrix S	oike Samole	MS = Matrix Solice Sample, MSD × Matrix Solice Disalicate Council	ile Onei	Somo?	1	(-	For Lab Receiving The Only	Jak.

3.) Field Filtered: For Equid matrices, indicate with B · Y - for yes the sample was field filtered or • N • for sample was not field filtered.

4.) Mothy Codes DW-Drinking Water, GW-Groundwaler, SW-Surface Water, WW-Water Water, W-Vaiter, SO-Soli, SD-Soliment, SL-Sindge, SS-Solid Water, O-Oil, F-Filter, P-Wipe, U-Urine, P-Fecal, N-Nemal S.) Sample Analyzis Requested: Analyzis and requested (i.e. \$2508, 6108)/4704.) and number of containers provided for each (i.e. \$2508 - 3,60108)/4704.) and number of containers provided for each (i.e. \$2508 - 3,60108)/4704.) and number of containers are an interpreted of the interpretation of the interpretati

Tler 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
· · · · · · · · · · · · · · · · · · ·	TDD No: TO2-09-09-0902

Laboratory: GEL Laboratories, LLC	Lab Project Number: 239856
Sampling Dates: 10/22/09 & 10/23/09	Sample Matrix: Soli
Analytical Method: METALS (EPA 8010B)	Data Reviewer: M. Song

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song	Date: 12/9-/09
Technical QA Reviewer: Howard Edwards	Date: 12/8/09
Project Manager; <u>Dan Haag</u>	Date: 12/9/07
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- SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	SME-S-001	239856-001
. 2	SME-S-002	239856-002
3	SME-S-003	239856-003
4	SME-S-1003	239856-004
6 '	SME-S-004	239856-006
6	SME-S-005	239856-008
7	SME-S-006	239856-007
8	BAG-S-001	239858-008
9	BAG-S-002	239856-009
10	BAG-S-003	239856-010
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Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
Project Number: 002693.2053.01RA	TDD No: TO2-09-09-0002

DATA PACKAGE COMPLETENESS CHECKLIST:

X Included: no problems Included: problems noted in review Not Included and/or Not Available **Not Required** RS Provided As Re-submission Case Narrative: X Case Narrative present **Quality Control Summary Package:** X Data Summary sheets Initial and Continuing Calibration results **CRDL Standard results** Preparation Blank and Calibration Blank results ICP Interference Check Sample results Matrix Spike recoveries **Matrix Duplicate results Laboratory Control Sample recoveries** Method of Standard Additions results

Raw QC Data Package Section

Ghecklist Code:

<u> </u>	_ Chain-of-Custody Records
X	Instrument Printouts
Х	Sample Preparation Notebook Pages
Х	Logbook and Worksheet Pages
NR	Percent Solids Determination

ICP Interelement Correction Factors

NR ICP Serial Dilution results
X Instrument Detection Limits

NR ICP Linear Ranges
X Preparation Log
X Analysis Run Log

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
Project Number: 002693.2053.01RA	TDD No: TO2-09-09-0002

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	Holding Times	YES
2	Initial and Continuing Calibrations	YES
3	Laboratory Control Sample	YES
4	Matrix Spike	YES
5	Blanks and Background Samples	YES
6	Duplicate Analyses	NO
7	Interference Check Samples and Serial Dilution Analysis	YES ·
8	Post Digestion Spike and Standard Addition Analysis	N/A
9	Analyte Quantitation	YES
10	Overall Assessment of Data	YES
11	Usability of Data	YES

Comments: N/A: Not Applicable.

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
Project Number: 002693.2053.01RA	TDD No: TO2-09-09-0902

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X	Acceptable
	Acceptable with qualification
	Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the nondetected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

All Sample Matrices:

Mercury: 28 days (from collection) for analysis.

Hexavalent chromium: 24 hours (from collection) for analysis.

All other metals: 180 days (from collection) for analysis.

Comments: All holding times were met.

2. INITIAL AND CONTINUING CALIBRATION VERIFICATION

Χ	Acceptable
	Acceptable with qualification
	Unacceptable

Unless flagged below, an initial calibration verification (ICV) and a calibration blank were analyzed at the beginning of the run, and a continuing calibration verification (CCV) and a calibration blank were analyzed after every ten samples, and at the end of the run. ICV and CCV recoveries were within a range of 80-120% for mercury and tin, and 90-110% for all other metals. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 65% or above 135% (for mercury and tin) or below 75% or above 125% (for all other metals), all associated data are rejected (R).

Comments: All recoveries of metals in initial and continuing calibration verifications were within the control limits.

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
Project Number: 002693.2053.01RA	TDD No: TO2-09-09-0002

	3. LABORATORY CONTROL SAMPLE
X	Acceptable
	Acceptable with qualification
	Unacceptable No Laboratory Control Samples Analyzed
	No Laboratory Control Samples Analyzed
(bias) ii Samplii exceed In case	tory control sample recoveries are used for a qualitative indication of accuracy independent of matrix effects. LCS recovery limits should either be specified in the ing and Analysis Plan or can be established by the laboratory. For analytes which ed these control limits, associated detected results are qualified as estimated (J). In where the recovery was below 30%, all associated nondetected results are the control results are qualified as estimated (J).
Comme	ents: Percent recoveries of LCS were within the control limits.
	4. MATRIX SPIKE
Х	_Acceptable
	Acceptable with qualification
	Unacceptable
	No Matrix Spikes Analyzed

Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. Unless flagged below, one laboratory control sample was analyzed at a rate of one per batch or one per 20 samples. Recoveries were within a range of 75-125%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Sample SME-S-002 was designated for matrix spike and matrix spike duplicate analysis. Recoveries of Ba, Cr, Cu, Pb, Ni, Se, and Zn were outside of required range. Qualification was not required because the amount of these metals present in the parent sample was greater than 4 times the amount spiked.

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
Project Number: 002693.2053.01RA	TDD No: TO2-09-09-0002

	5. BLANKS AND BACKGROUND SAMPLES
X Accep	otable tion Limits Adjusted
X Methodology Methodology Field Calibo Rinsa Backo	blanks were analyzed: od (preparation) Blanks Blanks ration Blanks te Blanks ground Samples
preparation bla sample analys detected in an	ank was analyzed after every continuing calibration standard, prior to is unless noted below. Any compound detected in the sample and also y associated blank, must be qualified as non-detect (U) when the sample is less than 5x the blank concentration.
Comments: N	o contamination was found in the method blank at reporting limit level.
	6. DUPLICATE ANALYSES
Unacc	otable otable with qualification ceptable oplicates Analyzed
	ates analyzed: Duplicates atory Duplicates
using the equa	elative Percent Difference (RPD) between the members of duplicate pairs ation indicated below. Qualify the detected results as estimated (J) for any RPD in a laboratory duplicate exceeds 20% for water samples or 35% for
	RPD = <u>2(Value 1 - Value 2)</u> x 100% Value 1 + Value 2

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
Project Number: 002693.2053.01RA	TDD No: TO2-09-09-0002

Analyte (mg/kg)	SME-S-003	SME-S-1003	RPD (%)
Antimony	7.56	8.14	7
Arsenic	33.7	39.3	15
Barium	167	149	11
Beryllium	5.65	6.35	12
Cadmium	1.38	1.63	17
Chromium	89.4	85.2	5
Cobalt	6.09	7.52	21
Copper	622	244	87*
Lead	140	112	22
Molybdenum	13.8	15.3	. 10
Nickel	75.1	78.5	4
Selenium	48.8	31.6	43*
Silver	1.57	<1.19	Not calculated
Thallium	<5.73	9.89	Not calculated
Vanadium	13.5	15.2	12
Zinc	5580	3610	43*

*: RPD>35%

Comments: SME-S-1003 was a field duplicate of SM-S-003 and the detected Cu, Se, and Zn results were qualified as estimated (J).

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
Project Number: 002693.2053.01RA	TDD No: TO2-09-09-0902

7. INTERFERENCE CHECK SAMPLES AND SERIAL DILUTION ANALYSIS
X Acceptable Acceptable with qualification Unacceptable Not required
Interference Check Samples (ICS) - Unless flagged below, an ICS was analyzed at the beginning and end of each run and at least twice every eight hours. Recoveries were within a range of 80-120%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J) if the concentrations of AI, Ca, Fe, or Mg are higher in the sample than in the ICS.
Serial Dilution Analysis - Unless flagged below, a serial dilution analysis was performed at a rate of one per 20 samples on a sample having analyte concentrations greater than 50 times the IDL. Percent differences were within a range of 0-10%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).
Comments: ICS recoveries were within the control limit. Sample SME-S-002 was used for serial dilution and percent differences were less than 10%.
8. POST DIGESTION SPIKE AND STANDARD ADDITIONS
Acceptable Acceptable with qualification Unacceptable X Not required
Post-digestion spikes - If a furnace AA result was flagged by the laboratory with an E to indicate interference, and the associated post-digestion spike recovery was less than 10%, the associated results are rejected (R).
Method of Standard Additions - If the method of standard additions was required and the correlation coefficient was less than 0.995, the associated results were qualified as estimated (J).
Comments:

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
Project Number: 002693.2053.01RA	TDD No: TO2-09-09-0902

9. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

Water samples:

ug/L = (Instrument printout concentration, mg/L)(1000 ug/mg)(final volume of extract, mL)

(Initial volume of extract, mL)

Soil samples:

mg/kg = (Instrument printout concentration, mg/L)(final volume of extract, mL)(0.001 L/mL)

(weight of sample extracted, g)(0.001 kg/g)(fraction solids)

Comments: Analyte quantitation is acceptable.

Sample SME-S-003

Ba: (1455.3 ug/L) (0.05L/0.525g) (100/83) = 166.99 ug/g= 166.99 mg/kg.

Lab reported 167 mg/kg.

Cu: (542.64 ug/L) (0.05 L/0.525g) (100/83) (10) = 622.65 ug/g = 622.65 mg/kg.

Lab reported 622 mg/kg.

Pb: (121.84 ug/L) (0.05L/0.525g) (100/83) (10) = 139.8 ug/g= 139.8 mg/kg.

Lab reported 140 mg/kg.

Zn: (4865.8 ug/L) (0.05 L/0.525 g) (100/83) (10) = 5583 ug/g = 5583 mg/kg.

Lab reported 5580 mg/kg.

10. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

	Acceptable
Х	Acceptable with Qualification
	Rejected
Accepte	d data meet the minimum requirements for the following EPA data category:
	ERS Screening Non-definitive with 10 % Conformation by Definitive Methodology
	Definitive, Comprehensive Statistical Error Determination was performed.
X	Definitive, Comprehensive Statistical Error Determination was not performed.
	·

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments: Data as reported are valid.

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
	TDD No: TO2-09-09-0002

11. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the <u>EPA</u>
<u>EMERGENCY RESPONSE SECTION AND SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM</u>
<u>QUALITY ASSURANCE SAMPLING PLAN FOR SOIL, WATER AND MISCELLANEOUS MATRIX SAMPLING, HALACO BUILDING ASSESSMENT, OXNARD, VENTURA COUNTY, CALIFORNIA, OCTOBER 16, 2009</u>
(QASP).

The following data use objective was indicated in the QASP:

TO ASSIST IN DETERMINING THE PRESENCE OR ABSENCE OF A HAZARDOUS MATERIAL OR SUBSTANCE AT LEVELS ABOVE AN AVAILABLE DETECTION OR QUANTIFICATION LEVEL.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVE.

B. These data meet quality objectives stated in the QASP.

AS INDICATED IN SECTION 2.4 OF THE QASP, THE INVESTIGATION WILL GENERATE BOTH SCREENING AND DEFINITIVE DATA AND TABLE E OF THE QASP OUTLINES THE DATA QUALITY INDICATOR GOALS APPLICABLE TO THE DEFINITIVE DATA QUALITY LEVEL. THE DATA IN THIS PACKAGE MEET THESE REQUIREMENTS.

12. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problems requiring corrective action were found.

Resolution: Not required.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.

SDG No: 239856

METHOD TYPE: SW846

SAMPLE ID: 239856001

CLIENT ID: SME-S-001

CONTRACT: ECOL00209

MATRIX:S		DATE RI	ECEIVE	D 27	-OCT-	09	LEVE	L: Low	%SOLIDS: 72	
CAS No	Analyte	Result	Units	Ç	Qual	М	MDL	DF	<u>Instrument</u> <u>ID</u>	Analytical Run
7440-36-0	Antimony	4.4	mg/kg	υ		P	4.4	10	OPTIMA2	110609A-4
7440-38-2	Arsenic	14.5	mg/kg	В	*	P	6.67	10	OPTIMA2	110609A-4
7440-39-3	Barium	237	mg/kg		N	P	1.33	10	OPTIMA2	110609A-4
7440-41-7	Beryllium	4.13	mg/kg	В		P	1.33	10	OPTIMA2	110609A4
7440-43-9	Cadmium	5.55	mg/kg	В		P	1.33	10	OPTIMA2	110609A4
7440-47-3	Chromium	81.3	mg/kg		*N	P	2	10	OPTIMA2	110609A-4
7440-48-4	Cobalt	20	mg/kg			P	2	10	OPTIMA2	110609A-4
7440-50-8	Copper	201 J	mg/kg		*N	P	4	10	OPTIMA2	110609A-4
7439-92-1	Lead	44.4	mg/kg		N	P	3.34	10	OPTIMA2	110609A-4
7439–98– 7	Molybdenum	32.5	mg/kg			P	2.67	10	OPTIMA2	110609A-4
7440-02-0	Nickel	49.8	mg/kg		*EN	P	2	10	OPTIMA2	110609A-4
7782-49-2	Selenium	15.6 J	mg/kg	В	N	P	6.67	10	OPTIMA2	110609A-4
7440-22-4	Silver	1.92	mg/kg	В		P	1.33	10	OPTIMA2	110609A4
7440-28-0	Thallium	6.67	mg/kg	U	*N	P	6.67	10	OPTIMA2	110609A-4
7440-62-2	Vanadium	10.6	mg/kg			P	1.33 .	10	OPTIMA2	110609A-4

1070 Jmg/kg

Zinc

m 12/7/09

OPTIMA2 110609A--4

7440-66-6

METALS
-1INORGANICS ANALYSIS DATA PACKAGE

METHOD TYPE: SW846

SAMPLE ID: 239856002

CLIENT ID: SME-S-002

CONTRACT: ECOL00209

DATE RECEIVED 27-OCT-09 LEVEL: Low %SOLIDS: 83 MATRIX:S Instrument Analytical <u>DF</u> $\underline{\mathbf{C}}$ <u>Qual</u> M **MDL** Run **Units** \mathbf{ID} CAS No **Analyte** Result OPTIMA1 110609E-1 1 P 0.392 6.13 mg/kg -7440-36-0 Antimony P 5.94 10 OPTIMA1 110909B-2 В mg/kg 7440-38-2 Arsenic 21.9 P 0.119 1 OPTIMA1 110609E-1 mg/kg N Barium 856 7440-39-3 OPTIMA1 110609E-1 P 0.119 1 Beryllium 72.5 mg/kg 7440-41-7 10 OPTIMA1 · 110909B-2 P 1.19 mg/kg В Cadmium 1.68 7440-43-9 1 OPTIMA1 110609E-1 *N P 0.178 73 mg/kg Chromium 7440-47-3 1 OPTIMA1 110609E-1 P 0.178 mg/kg Cobalt 5.97 7440-48-4 10 OPTIMA1 110909B-2 3.56 308 J mg/kg *N P 7440-50-8 Copper P 2.97 10 OPTIMA1 110909B-2 N mg/kg Lead 46.5 7439-92-1 10 OPTIMA1 110909B-2 P 2.38 3.87 mg/kg В Molybdenum 7439-98-7 OPTIMA1 110609E-1 P 0.178 1 *EN 46.5 mg/kg Nickel 7440-02-0 10 OPTIMA1 110909B-2 P 5.94 N 86.2 J mg/kg 7782-49-2 Selenium OPTIMA1 110909B-2 P 10 В 1.19 mg/kg Silver 4.96 7440-22-4 110909B-2 P 5.94 10 OPTIMA1 U *N 5.94 mg/kg Thallium 7440-28-0

mg/kg

1720 J mg/kg

8.92

Vanadium

Zinc

7440-62-2

7440-66-6

P

P

1.19

3.92

m / 12/7/09

10

10

OPTIMA1

110909B-2

OPTIMA1 110909B-2

METALS
-1INORGANICS ANALYSIS DATA PACKAGE

METHOD TYPE: SW846

SAMPLE ID: 239856003

CLIENT ID: SME-S-003

CONTRACT: ECOL00209

MATRIX:S

DATE RECEIVED 27-OCT-09

LEVEL: Low %SOLIDS: 83

CAS No	Analyte	Result	Units	<u>C</u>	Oual	M	MDL	DF	Instrument ID	Analytical Run
7440-36-0	Antimony	7.56	mg/kg			P	0.378	1	OPTIMAI	110609E-1
7440-38-2	Arsenic	33.7	mg/kg	В	*	P	5.73	10	OPTIMA1	110909B-2
7440-39-3	Barium	167	mg/kg		N	P	0.115	1	OPTIMA1	110609E-1
7440-41-7	Beryllium	5.65	mg/kg			P	0.115	1	OPTIMA1	110609E-1
7440-43-9	Cadmium	1.38	mg/kg	В		P	1.15	1Ò	OPTIMA1	110909B-2
7440-47-3	Chromium	89.4	mg/kg		*N	P	0.172	1	OPTIMA1	110609E1
7440-48-4	Cobalt	6.09	mg/kg			P	0.172	1	OPTIMA1	110609E1
7440-50-8	Copper	622 ブ	mg/kg		*N	P	3.44	10	OPTIMA1	110909B-2
7439-92-1	Lead	140	mg/kg		N	P	2.87	10	OPTIMA1	110909B-2
7439-98-7	Molybdenum	13.8	mg/kg			P	2.29	10	OPTIMA1	110909B-2
7440-02-0	Nickel	75.1	mg/kg		*EN	P	. 0.172	1	OPTIMA1	110609E-1
7782-49-2	Selenium	48.8 J	mg/kg		N	P	5.73	10	OPTIMA1	110909B-2
7440-22-4	Silver	1.57	mg/kg	В		P	1.15	10	OPTIMA1	110909B-2
7440-28-0	Thallium	5.73	mg/kg	U	*N	P	5.73	10	OPTIMA1	110909B-2
7440622	Vanadium	13.5	mg/kg			P	1.15	10	OPTIMA1	.110909B-2
7440–66–6	Zinc	5580 ブ	mg/kg		*	P	3.78	10	OPTIMA1	110909B-2

METALS
-1INORGANICS ANALYSIS DATA PACKAGE

METHOD TYPE: SW846

SAMPLE ID: 239856004

CLIENT ID: SME-S-1003

CONTRACT: ECOL00209

MATRIX:S

DATE RECEIVED 27-OCT-09

LEVEL: Low %SOLIDS: 83

CAS No	Analyte	Result	<u>Units</u>	<u>c</u>	Qual	<u>M</u>	MDL	<u>DF</u>	Instrument D	Analytical Run
7440–36–0	Antimony	8.14	mg/kg			P	0.392	1	OPTIMA1	110609E-1
7440-38-2	Arsenic	39.3	mg/kg		*	P	5.94	10	OPTIMA1	110909B-2
7440-39-3	Barium	149	mg/kg		N	P	0.119	1	OPTIMA1	110609E-1
7440-41-7	Beryllium	6.35	mg/kg			Ρ.	0.119	1	OPTIMA1	110609E-1
7440-43-9	Cadmium	1.63	mg/kg	В		P	1.19	10	OPTIMA1	110909B-2
7440-47-3	Chromium	85.2	mg/kg		*N	P	0.178	1	OPTIMA1	110609E-J
7440-48-4	Cobalt	7.52	mg/kg			P	0.178	1	OPTIMA1	110609E-1
7440-50-8	Copper	244 J	mg/kg		*N	P	3.56	10	OPTIMA1	110909B-2
7439-92-1	Lead	112	mg/kg		N	P	2.97	10	OPTIMA1	110909B-2
7439987	Molybdenum	15.3	mg/kg			P	2.38	10	OPTIMA1	110909B-2
7440-02-0	Nickel	78.5	mg/kg		*EN	P	0.178	1	OPTIMA1	110609E-1
7782-49-2	Selenium	31.6 J	mg/kg	В	N	P	5.94	10	OPTIMA1	110909B-2
7440-22-4	Silver	1.19	mg/kg	U		P	1.19	10	OPTIMA1	110909B-2
7440-28-0	Thallium	9.89	mg/kg	В	*N	. P	5.94	10	OPTIMA1	110909B-2
7440-62-2	Vanadium	15.2	mg/kg			P	1.19	10	OPTIMA1	110909B-2
7440-66-6	Zinc	3610ブ	mg/kg		*	P	3.92	10	OPTIMA1	110909B-2

SDG No: 239856

METHOD TYPE: SW846

SAMPLE ID: 239856005

CLIENT ID: SME-S-004

CONTRACT: ECOL00209

MATRIX:S

DATE RECEIVED 27-OCT-09

LEVEL: Low %SOLIDS: 88

CAS No	Analyte	Result	<u>Units</u>	C	Qual	M	MDL	DF	Instrument ID	Analytical Run
7440-36-0	Antimony	31	mg/kg			P	0.375	1	OPTIMA1	110609E-1
7440-38-2	Arsenic	10.8	mg/kg		*	P	0.568	1	OPTIMA1	110609E-1
7440-39-3	Barium	2880	mg/kg		N	P	0.114	1	OPTIMA1	110609E-1
7440-417	Beryllium	62.9	mg/kg			P	0.114	1	OPTIMA1	110609E-1
7440–43–9	Cadmium	4.82	mg/kg			P	0.114	1	OPTIMA1	110609E-1
7440-47-3	Chromium	174	mg/kg		*N	P	0.17	1 .	OPTIMA1	110609E-1
7440–48–4	Cobalt	5.87	mg/kg			P	0.17	1	OPTIMA1	110609E-1
7440-50-8	Соррег	2020 🗓	mg/kg		*N	P	0.341	1	OPTIMA1	110609E-1
7439-92-1	Lead	139	mg/kg		N	P	2.84	10	OPTIMA1	110909B-2
7439-98-7	Molybdenum	5.26	mg/kg			P	0.227	1	OPTIMAI	111709-3
7440-02-0	Nickel	77.8	mg/kg		*EN	P	0.17	1	OPTIMA1	110609E-1
7782-49-2	Selenium	74.5 3	mg/kg		N	P	5.68	10	OPTIMA1	110909B-2
7440-22-4	Silver	10.3	mg/kg			P	0.114	1	OPTIMA1	110609E-1
7440-28-0	Thallium	12	mg/kg	В	*N	P	5.68	10	OPTIMA1	110909B-2
7440-62-2	Vanadium	29.6	mg/kg			Ρ.	0.114	1	OPTIMA1	110609E-1
7440–66–6	Zinc		mg/kg		*	P	3.75	10	OPTIMA1	110909B-2

SDG No: 239856

7440-50-8

7439-92-1

7439-98-7

7440-02-0

7782-49-2

7440-22-4

7440-28-0

7440-62-2

7440-66-6

METHOD TYPE: SW846

10

10

10

1

10

10

10

10

10

OPTIMA1 110909B-2

OPTIMA1 110909B-2

110909B-2

110609E-1

110909B-2

110909B-2

110909B--2

110909B-2

OPTIMA1

OPTIMA1

OPTIMA1

OPTIMA1

OPTIMA1

OPTIMA1

SAMPLE ID: 239856006

CLIENT ID: SME-S-005

CONTRACT: ECOL00209

Copper

Lead

Molybdenum

Nickel

Selenium

Silver

Thallium

Vanadium

Zinc

LEVEL: Low %SOLIDS: 81 DATE RECEIVED 27-OCT-09 MATRIX:S Instrument Analytical $\overline{\mathbf{DF}}$ **MDL** <u>M</u> CAS No **Analyte** Result **Units** <u>C</u> <u>Oual</u> Run \mathbf{m} P 0.403 1 OPTIMA1 110609E-1 4.24 mg/kg 7440-36-0 Antimony OPTIMA1 110909B-2 10 p 6.1 16.3 mg/kg В Arsenic 7440-38-2 P 0.122 1 OPTIMA1 110609E-J N mg/kg Barium 41.1 7440-39-3 110609E-1 OPTIMA1 P 0.122 1 Beryllium 7.48 mg/kg 7440-41--7 OPTIMA1 110909B-2 P 1.22 10 mg/kg U 1.22 7440-43-9 Cadmium OPTIMA1 110609E-1 *N P 0.183 1 7440-47-3 Chromium 36.5 mg/kg P 1 OPTIMA1 110609E-1 0.183 mg/kg 7440-48-4 Cobalt 15.4 OPTIMA1 110909B-2

P

P

P

P

P

p

p

. **P**

P

*N

N

*EN

N

*N

U

В

U

3.66

3.05

2.44

0.183

6.1

1.22

6.1

1.22

4.03

120 J mg/kg

68.2 ブ mg/kg

481 J mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

17.6

2.44

33.5

2.55

6.1

- 9.41

SDG No: 239856

METHOD TYPE: SW846

SAMPLE ID: 239856007

CLIENT ID: SME-S-006

CONTRACT: ECOL00209

MATRIX:S		DATE R	ECEIVE	D 27	–OCT⊣	09	LEVE	L: Low	%SOLIDS: 79	
CAS No	Analyte	Result	<u>Units</u>	C	<u>Oual</u>	M	MDL	DF	Instrument ID	Analytical Run
7440-36-0	Antimony	18.3	mg/kg			P	0.398	1	OPTIMAI	110609E-I
7440-38-2	Arsenic	9.33	mg/kg		*	P	0.603	. 1	OPTIMA1	110609E-1
7440-39-3	Barium	432	mg/kg		N	P	0.121	1	OPTIMA1	110609E-1
7440-417	Beryllium	6.91	mg/kg			P	0.121	1	OPTIMA1	110609E-1
7440–439	Cadmium	4	mg/kg			P	0.121	1	OPTIMA1	110609E-1
7440–47–3	Chromium	203	mg/kg		*N	P	0.181	1	OPTIMA1	110609E-1
7440-48-4	Cobalt	4.63	mg/kg			P	0.181	1	OPTIMA1	110609E-1
7440-50-8	Copper	2270	mg/kg		*N	P	0.362	1	OPTIMA1	110609E-1
7439-92-1	Lead	152	mg/kg		N	P	3.01	10	OPTIMA1	110909B-2
7439987	Molybdenum	6.35	mg/kg			P	0.241	1	OPTIMA1	111709-3
7440-02-0	Nickel	105	mg/kg		*EN	P	0.181	1	OPTIMA1	110609E-1
7782–49–2	Selenium	2.07	mg/kg	В	N	P	0.603	1	OPTIMA1	110609E-1
7440-22-4	Silver	4.92	mg/kg			P	0.121	1	OPTIMA1	110609E-1
7440-28-0	Thallium	6.03	mg/kg	U	*N	P	6.03	10	OPTIMA1	110909B-2
7440-62-2	Vanadium	. 34.6	mg/kg			P	0.121	1	.OPTIMA1	110609E-1
7440-66-6	Zinc	1930 ე	mg/kg		*	P	3.98	10	OPTIMA1	110909B-2

SDG No: 239856

METHOD TYPE: SW846

SAMPLE ID: 239856008

CLIENT ID: BAG-S-001

CONTRACT: ECOL00209

MATRIX:S

DATE RECEIVED 27-OCT-09

LEVEL: Low %SOLIDS: 74

CAS No	Analyte	Result	<u>Units</u>	<u>c</u>	Qual	M	MDL	<u>DF</u>	Instrument ID	Analytical Run
7440–36–0	Antimony	4.8	mg/kg			P	0.437	1	OPTIMA1	110609E-1
7440-38-2	Arsenic	29.2	mg/kg	В	*	P	6.62	10	OPTIMA1	110909B-2
7440-39-3	Barium	354	mg/kg		N	P	0.132	1	OPTIMA1	110609E-1
7440-41-7	Beryllium	18.8	mg/kg			P	0.132	1	OPTIMA1	110609E-1
7440-43-9	Cadmium	1.32	mg/kg	υ		P	1.32	10	OPTIMA1	110909B-2
7440-47-3	Chromium	197	mg/kg		*N	P	0.198	1	OPTIMA1	110609E-1
7440-48-4	Cobalt	22.3	mg/kg			P	0.198	1	OPTIMA1	110609E-1
7440-50-8	Copper	364 ゴ	mg/kg		*N	P	3.97	10	OPTIMA1	110909B-2
7439-92-1	Lead	7.19	mg/kg	В	N	P	3.31	10	OPTIMA1	110909B-2
7439-98-7	Molybdenum	64.1	mg/kg			P	2.65	10	OPTIMA1	110909B-2
7440020	Nickel	256	mg/kg		*EN	P	0.198	1	OPTIMA1	110609E-1
7782-49-2	Selenium	72.2 ブ	mg/kg		N	P	6.62	10	OPTIMA1	110909B-2
7440-22-4	Silver	3.54	mg/kg	В		P	1.32	10	OPTIMA1	110909B-2
7440-28-0	Thallium	. 6.62	mg/kg	U	*N	P	6.62	10	OPTIMA1	110909B-2
7440-62-2	Vanadium ·	20.6	mg/kg			P	1.32	10	OPTIMA1	110909B-2
7440-66-6	Zinc	698 T	mg/kg		*	P	4.37	10	OPTIMA1	110909B-2

METALS -1INORGANICS ANALYSIS DATA PACKAGE

SDG No: 239856

METHOD TYPE: SW846

SAMPLE ID: 239856009

CLIENT ID: BAG-S-002

CONTRACT: ECOL00209

MATRIX:S	•	DATE RI	ECEIVE	D 27	-OCT-	09	LEVE	L: Low	%SOLIDS:	83
CAS No	Analyte	Result	<u>Units</u>	C	Qual	M	MDL	DF	Instrument ID	Analytical Run
7440–36–0	Antimony	5.15	mg/kg			P	0.378	1	OPTIMA1	110609E-1
7440-38-2	Arsenic	24.4	mg/kg	В	*	P	5.73	10	OPTIMA1	110909B-2
7440-39-3	Barium	923	mg/kg		N	P	0.115	1	OPTIMA1	110609E-1
7440-41-7	Beryllium	67.4	mg/kg			P	0.115	1	OPTIMA1	110609E-1
7440-43-9	Cadmium	1.39	mg/kg	В		P	1.15	10	OPTIMA1	110909B-2
7440-47-3	Chromium	58.3	mg/kg		*N	P	0.172	1	OPTIMA1	110609E-1
7440-48-4	Cobalt	5.65	mg/kg			P	0.172	1	OPTIMA1	110609E-1
7440-50-8	Copper	207ブ	mg/kg		*N	P	3.44	10	OPTIMA1	110909B-2
7439-92-1	Lead	42.1	mg/kg		N	P	2.86	10	OPTIMA1	110909B-2
7439-98-7	Molybdenum	6.5	mg/kg	В		P	2.29	10	OPTIMA1	110909B-2
7440-02-0	Nickel	41.2	mg/kg		*EN	P	0.172	1	OPTIMA1	110609E-1
7782-49-2	Selenium	81.3 ブ	mg/kg		N	P	5.73	10	OPTIMA1	110909B2
7440-22-4	Silver	4.63	mg/kg	В		P	1.15	10	OPTIMA1	110909B-2
7440-28-0	Thallium	10.1	mg/kg	В	*N	P	5.73	10	OPTIMA1	110909B-2
7440-62-2	Vanadium-	9.18	mg/kg		•	P	1.15	10	OPTIMA1	110909B-2
7440666	Zinc	1830 ፓ	mg/kg		*	P	3.78	10	OPTIMA1	110909B-2

12/7/09

METALS
-1INORGANICS ANALYSIS DATA PACKAGE

SDG No: 239856

METHOD TYPE: SW846

SAMPLE ID: 239856010

CLIENT ID: BAG-S-003

CONTRACT: ECOL00209

Thallium

Vanadium

Zinc

7440-28-0

7440-62-2

7440-66-6

5.78

19.9

mg/kg

mg/kg

4320 J mg/kg

U

LEVEL: Low %SOLIDS: 86 DATE RECEIVED 27-OCT-09 MATRIX:S Instrument Analytical <u>DF</u> **MDL** CAS No **Analyte** Result <u>Units</u> Ç <u>Qual</u> M Run \mathbf{ID} P 0.382 1 OPTIMA1 110609E-1 7440-36-0 Antimony 6.37 mg/kg 10 OPTIMA1 110909B-2 В p 5.78 28.2 mg/kg 7440-38-2 Arsenic P 0.116 1 OPTIMA1 110609E-1 700 N mg/kg Barium 7440-39-3 OPTIMA1 110609E-1 P 0.116 1 7440-41-7 Beryllium 33.8 mg/kg OPTIMA1 110909B-2 P 1.16 10 3.69 mg/kg В Cadmium 7440-43-9 OPTIMA1 110609E-1 *N P 0.174 1 7440-47-3 Chromium 117 mg/kg P 1 OPTIMA1 110609E-1 mg/kg 0.174 14.3 7440-48-4 Cobalt 10 OPTIMA1 110909B-2 \mathbf{P} 3.47 *N 798 J mg/kg 7440-50-8 Copper OPTIMA1 110909B-2 P 10 Lead 81 mg/kg N 2.89 7439-92-1 P 2.31 10 OPTIMA1 110909B-2 17.5 mg/kg 7439-98-7 Molybdenum 1 OPTIMA1 110609E-1 *EN P 0.174 7440-02-0 Nickel 103 mg/kg P 10 OPTIMA1 110909B-2 N 5.78 7782-49-2 Selenium 48.9 ブ mg/kg OPTIMA1 110909B-2 P 10 Silver В 1.16 3.44 mg/kg 7440-22-4

P

P

P

*N

5.78

1.16

3.82

10

10

10

12/7/09

OPTIMAI 110909B-2

OPTIMA1 110909B-2

OPTIMA1 110909B-2

METALS -3bPREPARATION BLANK SUMMARY

SDG NO.

239856

Contract:

ECOL00209

Matrix:

SOIL

Sample ID	<u>Analyte</u>	Result	Units	Acceptance Window	<u>Conc</u> <u>Qual</u>	<u>M</u>	MDL	<u>RDL</u>
1201960528								
•	Molybdenum	0.19	mg/kg	+/0.952	υ	P	0.19	0.952
	Nickel	0.349	mg/kg	+/-0.476	В	P	0.143	0.476
	Selenium	0.476	mg/kg	+/-2.857	U	P	0.476	2.86
	Silver	0.0952	mg/kg	+/0.476	U	P	0.0952	0.476
	Thallium	0.476	mg/kg	+/-1.905	υ	P	0.476	1.9
	Vanadium	0.0952	mg/kg	+/-0.476	υ	P	0.0952	0.476
	Zinc	0.318	mg/kg	+/0.952	В	P	0.314	0.952
	Antimony	0.531	mg/kg	+/-0.952	В	P	0.314	0.952
	Barium	0.0952	mg/kg	+/0.476	U	P	0.0952	0.476
	Lead	0.238	mg/kg	+/0.952	υ	P	0.238	0.952
	Copper	0.286	mg/kg	+/-0.952	U	P	0.286	0.952
	Cobalt	0.143	mg/kg	+/-0.476	υ	P	0.143	0.476
	Chromium	0.143	mg/kg	+/-0.476	U	P	0.143	0.476
	Cadmium	0.0952	mg/kg	+/-0.476	U	P	0.0952	0.476
	Beryllium	0.0952	mg/kg	+/0.476	υ	P	0.0952	0.476
	Arsenic	0.476	mg/kg	+/-2.857	U	P	0.476	2.86
1201963699								
	Antimony	0.33	mg/kg	+/-1.0	U	P	0.33	1
	Соррег	0.3	mg/kg	+/-1.0	U	P	0.3	1
	Molybdenum	0.2	mg/kg	+/1.0	U	P	0.2	1
	Zinc	0.33	mg/kg	+/-1.0	U	P	0.33	1
	Vanadium	0.1	mg/kg	+/0.5	U	P	0.1	0.5
	Thallium	0.5	mg/kg	+/-2.0	U	P	0.5	2
	Silver	0.1	mg/kg	+/-0.5	U	P	0.1	0.5
	Selenium	0.5	mg/kg	+/-3.0	U	P	0.5	3
	Nickel	-0.166	mg/kg	+/0.5	В	P	0.15	0.5
	Lead	0.25	mg/kg	+/-1.0	U	P	0.25	. 1
	Cobalt	0.15	mg/kg	+/0.5	U	P	0.15	0.5
	Arsenic	0.5	mg/kg	+/-3.0	υ	P	0.5	3
	Barium	0.1	mg/kg	+/0.5	υ	P	0.1	0.5
	Beryllium	0.1	mg/kg	+/-0.5	υ	P	0.1	0.5
	Cadmium	0.1	mg/kg	+/0.5	υ	P	0.1	0.5
	Chromium	0.15	mg/kg	+/-0.5	U	P	0.15	0.5

12/7/69 SW846

164 effected from Level 4 Preservative Type (6) Note: extra sample is required for sample specific QC Comments for recitable (Fill in the number of containers for each test) Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 Sample Collection Time Zone Pacific ⅓ Sample Shipping and Delivery Details GEL Laboratories, LLC 2040 Savage Road Phone: (843) 556-8171 Eastern Central Charleston, SC 29407 Fax: (843) 766-1178 (SW/SW Sample Analysis Requested W1.10P 40= GEL Chain of Custody and Analytical Request 300 (266 (1/2 /(11) 99855011FOUL 403 VJ3 W5108 Method of Shipment: 20109 Ebk М GEL PM: M Lotal number of containers 4 Μ M Should this sample be considered 9 N Radionetive 900 Sample Matrix (4) S 2 8 So S 8 S B Ŝ Δ Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards 234856 Filtered (9) 10/27/09 Field 900 8 Send Results To: MS + N & PACNE. CON for TOHID GOOD & Moderal. Z Z Ĺ 2 (Subject to Surcharge) Fax Results: Z Z 2 ፞፞፞፞፞ Z Date (707) *Time Collected (Military) (hhmm) 0310 10/23/02 | 6700 1030 0830 SS0] 60/82/01 1035 .Phone #: (037 201/ 60/22/03 GEL Work Order Number: 10/12/09 1110 Fax#: Received by (signed) Kn Will 10/22/01 Chain of Custody Signatures Date Collected 60/22/01 10/22/01 60/22/01 10/23/09 10/23/09 (mm-dd-yy) ENVIRONMENT TAN 1330 * For composites - indicate start and stop date/time 153.01 RA 05 10/20/03 Rush: \$ Sample ID Date Client Name: Ecology 8215M TAT Requested: Normal Relinquished By (Signed) SNE-5-1003 SUE-5-203 SME-5-002 SME-5-004 SME -S-005 B49-S-002 SME -5-006 B46-M-1015 B49-5-001 SME-5-001 Project/Site Name: COC Number (1); Collected by: GEL Ouote #: PO Number: 是 Address:

Custody Seal Intact?
(TBS) NO
Cooler Temp: 4) Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Water, W=Water, SO=Soil, SD=Sediment, SL=Sindge, SS=Soild Waste, O=Oil, F=Filter, P=Wipe, U=Urine, P=Feesl, N=Nasa Proservalive Type: IA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfurle Acid, AA = Assorbic Acid, HX = Herrar, ST = Sodium Thiosulfac, If no preservative is seded = leave field blank · PINK = CLIENT 5.) Sample Analysis Requested: Analytical method requested (i.e. \$2608, 60108/7470A) and number of containers provided for each (i.e., \$2608 - 3, 60108/7470A - 1), YELLOW = FILE 3.) Field Filtered: For Ilquid matrices, indicate with a - Y - for yes the sample was field filtered or - N - for sample was not field filtered. WHITE - LABORATORY

2.) QC Codest: N - Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite

Chain of Custody Number - Client Determined

For Lab Receiving Use Only

Date Shipped:

Airbill #: Airbill #:

<i>f</i> 50 <i>f</i> 30 38 :38 :38 :38 :38 :38 :38 :38 :38 :38	1			·							GEL L	GEL Laboratories, LLC	LLC		Γ
	GEL Chain of Custody and Analytical Request	ain of	Cus	tody	and 1	Anal	ytical	Rec	lnesı		2040 8	2040 Savage Road			
											Charle	Charleston, SC 29407	107		
OC Number: GEL Won	GEL Work Order Number:	ber:							•		Phone	Phone: (843) 556-8171	17.1		
lient Name: ECOLOGY +0 ENVIRONMENT	- SAFE	Phone #:			_		Sample Analysis Requested (5)	Lnalysis	Reques	ted (3) (F	ill in the	number of c	containers	(Fill in the number of containers for each text)	T
		Fax #:			Sk	Should this	anan Lyn	(on	(4	/23 I	-			< Preservative Type (6)	6
.ddress:					3 5 	sample be considered:	4 07	7/L	P3ds	$\gamma /$		-	-		T
collected by: ACT Send Resu	Send Results To: ngon	Sak	8			pa	20 19 20 010	VS1	09					Comments	5
	*Date Collected							08					<u> </u>	required for sample	2 60
. Sample ID * For composites - indicate start and stop date/time	(mm-dd-yy)	(Military)	5 5 6 7	Filtered D Matrix 44	Matrix &	ISCV B	i leio] AG∃	443	154H 44 7	FIN				specific QC	
BAG-S-003	10/23/01	90	Z		So	 	×		K	X					T
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Valley (1990) (1991) (1									-			-			
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TAT Requested: Normal: Specify:	(Subject to Surcharge) Fax Results:	rge) Fax Re	sults:	Yes	┨、	2	Circle D		Cof	Circle Deliverable: C of A / OC Summary	Summary		[] [] [] [] [] [] [] [] [] []	7	1
known hazards	o these samples	? If so, ple	ase list	the hazu								Sampl	e Collection	Sample Collection Time Zone	7/
			•									Eastern Central Mountain		Cher	
	Chain of Custody Signatures								Sa	nple Shi	us Suide	Sample Shipping and Delivery Details	Details		
Relinquished By (Signed) Date Time	Received by (si	Ened)	Date	Time		GEL	GEL PM:								1
1945 (0/26/01 1730	1/m.x	Kellen	5	2409	1	Meth	Pocy Method of Shipment:	냝			Date	Date Shipped:			
2	2			- -		Airbill #:	¥						į		
	3					Airbill #:	#								
 Chain of Custody Number - Client Determined QC Codes: N = Normal Sample, TB = Trip Blank, FD - Field Duplicate, EB - Equipment Blank, 	2B = Equipment Blank,	MS ≈ Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G ≈ Grab, C = Composite	spike Samp	le, MSD – h	datrix Spike D	upficate Sa	nple, G≖ Gra	b, C = Con	posite				For La	For Lab Receiving Use Only	
1) Field Filteret: For liquid matrices, indicate with a - Y - for year the sample was field filtered or - N - for sample was field filtered. A) Marrier Codes DWas Datable Water Commentations Conservations Was Was Water Water Codes for the California for California for the Calif	was field filtered or - N	- for sample was not field filtered.	as not field	filtered.	90 m	2000		i			:		ਨੇ	Custody Seal Intact?	
4.) reuter Course, D. T. Collating where, O. T. Libentownsta, S. T. Surface, T. T. T. Waste, Waste, T. T. Waste, T. T. Course, D. T. Collating, S. Surface, S. T. Course, D. T. Course, D. T. Course, D. T. Course, S. Cours	10B/7470A) and numbe	r of containers ;	rovided for	carch (Le. 8	2608 - 3, 60J	Solid Was OB/7470A	ie, O-Coll, F- ·1).	Filter, P≕¼	ipe, U=Uń	ic, Pefecal,	N=Nasal			(ZES) NO	T
6.) Preservalor Type: HA - Hydrochlode Acid, NI - Nitric Acid, SH - Sodium Hydroxide, SA - Sulfuric Acid, AA - Ascorbic Acid, HX - Hexans, ST - Sodium Thiosulfate, If no preservative is added - leave field blank	im Hydroxide, SA = Su	Ifuric Acid, AA	- Ascorble	Acid, HX	Hexane, ST	* Sodlum T	hlosulfate, If n	io preserval	lve is added	- itave field	d blank			5 C	
WHITE = LABORATORY	RATORY		YELL	YELLOW = FILE	<u>8</u>	٠	· PINK = CLIENT	CLIEN	ے						

Tier 2 Validation

Site Name: Halaco Bullding Assessment	Location: Oxnard, Galifornia
TDD Number: TO2-09-09-09-0002	Project Number: 002693.2053.01RA

Laboratory: GEL Laboratories, LLC	Lab Project Number: 239856
Sampling Dates: 10/22/09 & 10/23/09	Sample Matrix; Soll
Analytical Method: VOCs by EPA 8260B (GCMS)	Data Reviewer; M. Song

REVIEW AND APPROVAL:

Data Reviewer:	Mindy Song	Dat	
Technical QA Rev	lewer: Howard Edwards	Dat	0: 17/8/04
Project Manager:	Dan Heag	, Dat	01 12/9/09
	. 0 /		

SAMPLE IDENTIFICATION:

Sample No.	Samplo I.D.	Laboratory I.D.
1	SME-S-001	239856-001
2	SME-S-002	239856-002
3	SME-\$-003	239856-003
4	SME-S-1003	239856-004
5	SME-S-006	239856-006
6	SME-S-006	239856-007
7	BAG-8-001	239856-008
8	BAG-8-002	239856-009
9	BAG-8-003	239856-010
10		
11	•	
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18		
19		
20		

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
TDD Number: TO2-09-09-09-0002	Project Number: 002693.2053.01RA

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:
X Included: no problems
Case Narrative: X Case Narrative present
Quality Control Summary Package: X Data Summary sheets NR Matrix Spike/Spike Duplicate Recoveries X Laboratory Control Sample Recoveries X Method Blank Summaries X GC/MS Tuning and Mass Calibration Initial Calibration Data X Continuing Calibration Data * Surrogate Compound Recovery Summary * Internal Standard Area Summary * Internal Standard Area Summary Sample and Blank Data Package Section X Reconstructed Ion Current (RIC) Chromatogram X Quantitation Reports X Raw and Enhanced Mass Spectra X Reference Mass Spectra for Target Compounds
NR Mass Spectral Library Search for TICs Raw QC Data Package Section X DFTPP and/or BFB mass spectra and mass listings X RIC Chromatogram for Standards, LCS, and MS/MSD X Quantitation Reports for Standards, LCS, and MS/MSD NR List of Instrument Detection Limits X Chain-of-Custody Records X Sample Preparation and Analysis Run Logs

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
TDD Number: TO2-09-09-09-0002	Project Number: 002693.2053.01RA

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

	· · · · · · · · · · · · · · · · · · ·	
1	Holding Times	YES
2	GC/MS Tuning Criteria	YES
3	Initial Calibrations	YES
4	Continuing Calibrations	YES
5	Laboratory Control Sample	YES
6	Matrix Spike/Matrix Spike Duplicate	YES
7	Blanks and Background Samples	YES
8	Surrogate Compounds	NO
9	Internal Standards	NO
10	Duplicate Analyses	NO
11	Analyte Identification	YES
12	Analyte Quantitation	YES
13	Overall Assessment of Data	YES
14	Usability of Data	YES

Comments:

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
TDD Number: TO2-09-09-09-0002	Project Number: 002693.2053.01RA

1. HOLDING TIMES

X	Acceptable	
	Acceptable with	qualification
	Unacceptable	

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the non-detected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

Water Samples:

EPA 8260B: 14 days (from collection) for analysis.

EPA 8270C: 7 days (from collection) for extraction; 40 days (from extraction) for analysis.

Soil or Other Matrices:

EPA 8260B: 14 days (from collection) for analysis.

EPA 8270C:14 days (from collection) for extraction;40 days (from extraction) for analysis.

Comments: Analytical holding time was met.

2. GC/MS INSTRUMENT PERFORMANCE CRITERIA

X BFB (EPA 8260B) or DFTPP (EPA 8270C) has been run for every 12 hours sample analysis per instrument.	
х	The BFB or DFTPP ion abundance criteria indicated in EPA/540/G-90/004 have been met for each instrument.

Comments: None.

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
TDD Number: TO2-09-09-0902	Project Number: 002693.2053.01RA

3.	INITIAL	CALIB	rati	IONS

X	Acceptable
	Acceptable with qualification
	Unacceptable

Unless flagged below, a 5-point initial calibration was run. In addition, average Relative Response Factor (RRF), and percent relative Standard Deviation (%RSD) values were within control limits (average RRF >= 0.05; %RSD <= 30). For analytes which exceeded the %RSD control limit, associated detected results are qualified as estimated (J). If the low calibration level was not detected, the non-detected results are qualified (UJ). For analytes which exceeded the RRF control limit, associated detected results are qualified as estimated (J) and the non-detected results are qualified as rejected (R).

Comments: Percent relative standard deviation values of all target analytes were within the control limits.

4. CONTINUING CALIBRATIONS

X	Acceptable
	Acceptable with qualification
	Unacceptable

Unless flagged below, continuing calibrations were performed at the beginning and at the end of any group of samples and at least every 12 hours. In addition, Percent Difference (%D) values were within the control limit (%D <= 25). For analytes which exceeded the %D control limit, associated detected results are qualified as estimated (J). In cases where the %D is very high and indicates a severe loss of instrument sensitivity, the associated non-detected results may be qualified as estimated (UJ) or rejected (R) based on the professional judgement of the reviewer.

Comments: Percent difference values of target analytes were within the control limits.

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California	
TDD Number: TO2-09-09-09-0002	Project Number: 002693.2053.01RA	

	5. LABORATORY CONTROL SAMPLE
X Acceptable Acceptable with Unacceptable No Laboratory C	qualification ontrol Samples Analyzed
(bias) independent of ma Sampling and Analysis P	e recoveries are used for a qualitative indication of accuracy trix effects. LCS recovery limits should either be specified in the lan or can be established by the laboratory. For analytes which mits, associated detected results are qualified as estimated (J).
Comments: LCS recoverie	es were within the control limits.
6.	MATRIX SPIKE/MATRIX SPIKE DUPLICATE
X Acceptable Acceptable with Unacceptable No Matrix Spike	qualification Matrix Spike Duplicates Analyzed
accuracy (bias) due to ma qualitative indication of p	pike duplicate recoveries are used for a qualitative indication of atrix effects. The RPD between the recoveries is used for a recision. Spike recovery limits of 80% to 120% are specified in

EPA/540/G-90/004. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). At the discretion of the reviewer, other limits may be used only if justification can be provided.

Comments: Sample SME-S-002 was designated for MS and MSD and the recoveries were within the control limits generated by the laboratory.

Tier 2 Validation

Site Name: Halaco Building Assessment		Location: Oxnard, California	
	TDD Number: TO2-09-09-0902	Project Number: 002693.2053.01RA	

7. BLANKS AND BACKGROUND SAMPLES

7. BEAUTO AND BASICIOUS SAIM 223	
X Acceptable Detection Limits Adjusted	
The following blanks were analyzed: X Method (preparation) Blanks Field Blanks Instrument Blanks Rinsate Blanks Background Samples VOA Trip Blanks	<i>4</i>)
Preparation (method) blanks were prepared for each batch of samples extra preparation blank was analyzed after every continuing calibration standard, sample analysis unless noted below. Any compound detected in the sample detected in any associated blank, must be qualified as non-detect (U) when concentration is less than 5x the blank concentration.	prior to e and also
Comments: No contamination was found in the method blank at reporting I	imit level.
8. SURROGATE COMPOUNDS	
Acceptable X Acceptable with qualification Unacceptable	

Surrogate compound recoveries for samples analyzed within a sample group must be within the limits specified in the method. If the surrogate recovery is between 10% and the lower limit, the associated detected results are qualified as estimated (J) and the non-detected results are qualified as estimated (UJ). If the surrogate recovery is <10%, the associated detected results are qualified as estimated (J) and the non-detected results are rejected (R). If the surrogate recovery is above the upper limit, the associated detected results are qualified as estimated (J). Surrogate recoveries which exceeded these limits are noted below and the associated results are qualified on the attached sample report forms.

Comments: Surrogate recoveries except samples SME-S-003 and SME-0S-1003 were within the control limit. The surrogate recoveries were above the upper limit and the detected results were qualified as estimated (J).

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
TDD Number: TO2-09-09-09-0002	Project Number: 002693.2053.01RA

9. INTERNAL STANDARDS

	Acceptable	
X	Acceptable with	qualification
	Unacceptable	•

Internal Standard area counts for samples analyzed within a sample group must be within the range of 50% to 200% of the internal standard area for the continuing calibration. If the internal standard area is between 10% and 50% of this value, the associated detected results are qualified as estimated (J) and the non-detected results are qualified as estimated (UJ). If the internal standard area is <10% of the calibration area, both the detected and non-detected results are rejected (R). If the internal standard area is >200% of the calibration area, the associated detected results are qualified as estimated (J). Internal standards which exceeded these limits are noted below and the associated results are qualified on the attached sample report forms.

Comments: The internal standard areas of samples except SME-S-002, SME-S-003, and SME-S-1003 were within the range of 50% to 200% of the internal standard area for the continuing calibration. Since the internal standard area was between 10% and 50%, the detected results qualified as estimated (J) and the non-detected results were qualified as estimated (UJ).

10. DUPLICATE ANALYSES

X	_ Acceptable _ Acceptable with qualification _ Unacceptable
	No Duplicates Analyzed
Type of	f duplicates analyzed:
X	_ Field Duplicates
	Laboratory Duplicates
using t	ate the relative Percent Difference (RPD) between the members of duplicate pairs he equation indicated below. Qualify the results as estimated (J) for any analyte RPD exceeds that specified in the Sampling and Analysis Plan.

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
TDD Number: TO2-09-09-09-0002	Project Number: 002693.2053.01RA

Analyte (ug/kg)	SME-S-003	SME-S-1003	RPD (%)
Acetone	50.7	23.7	73*
Methylene Chloride	7.29	6.26	15
Carbon Disulfide	31.8	11.2	96*
2-Butanone	90.5	47.5	62*
4-Methyl-2-pentanone	21.1	13.6	43*
Toluene	0.688	0.444	43*
2-Hexanone	15.7	10.3	42*
Styrene	3.68	1.92	63*
Xylenes	0.502	<1.21	Not calculated

*: RPD>35%

Comments: SME-S-1003 was a field duplicate of SME-S-003 and the detected results of analytes with RPD greater than 35% were qualified as estimated (J).

11. ANALYTE IDENTIFICATION

Evaluate the ion profiles for the sample analytes and compare them to the library ion profiles provided by the laboratory. Note any identifications which are not sufficiently supported by comparison to known ion profiles.

Comments: Analyte identification was acceptable.

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
TDD Number: TO2-09-09-0902	Project Number: 002693.2053.01RA

12. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

EPA 826	30B, water samples:
ug/L ≂	(analyte area)(amount of Internal standard, ng)
	(Internal standard area)(RF)(volume of water purged, mL)
	30B, soil samples:
ug/kg =	(analyte area)(amount of Internal standard, ng)
	(Internal standard area)(RF)(welght of soil extracted, g)(fraction solids)
	70C, water samples:
ug/L =	(analyte area)(amount of internal standard, ng)(total volume of extract, uL)
	(Internal standard area)(RF)(volume of sample extracted, mL)(Injection volume, uL)
	70C, soil samples:
ug/kg =	(analyte area)(amount of internal standard, ng)(total volume of extract, uL)
	(internal standard area)(RF)(weight of sample extracted, g)(fraction solids)(injection volume, uL)

Comments: Analyte quantitation was acceptable.

Sample SME-S-003

Ethylbenzene: ((48794) (50 ug/L)) / ((311078) (0.18605)) = 42.15 ug/kg.

(42.15 ug/kg) (100/83.1) = 50.7 ug/kg. Lab reported 50.7 ug/kg.

2-Butanone: ((92007) (50 ug/L)) / ((311078) (0.19671)) = 75.1774 ug/kg (75.179 ug/kg) (100/83.1) = 90.47 ug/kg. Lab reported 90.5 ug/kg.

13. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

x	Acceptable With Qualification
	Rejected
Accepte	d data meet the minimum requirements for the following EPA data category:
	ERS Screening
	Non-definitive with 10 % Conformation by Definitive Methodology
	Definitive, Comprehensive Statistical Error Determination was performed.
X	Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, California
TDD Number: TO2-09-09-09-0002	Project Number: 002693.2053.01RA

Comments: Data as reported are valid.

14. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the <u>EPA</u>
<u>EMERGENCY RESPONSE SECTION AND SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM</u>
<u>QUALITY ASSURANCE SAMPLING PLAN FOR SOIL, WATER AND MISCELLANEOUS MATRIX SAMPLING,</u>
<u>HALACO BUILDING ASSESSMENT, OXNARD, VENTURA COUNTY, CALIFORNIA, OCTOBER 16, 2009</u>
(QASP).

The following data use objective was indicated in the QASP:

TO ASSIST IN DETERMINING THE PRESENCE OR ABSENCE OF A HAZARDOUS MATERIAL OR SUBSTANCE AT LEVELS ABOVE AN AVAILABLE DETECTION OR QUANTIFICATION LEVEL.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVE.

B. These data meet quality objectives stated in the QASP.

AS INDICATED IN SECTION 2.4 OF THE QASP, THE INVESTIGATION WILL GENERATE BOTH SCREENING AND DEFINITIVE DATA AND TABLE E OF THE QASP OUTLINES THE DATA QUALITY INDICATOR GOALS APPLICABLE TO THE DEFINITIVE DATA QUALITY LEVEL. THE DATA IN THIS PACKAGE MEET THESE REQUIREMENTS.

15. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problem requiring corrective action was found.

Resolution: Not required.

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Volatile
Certificate of Analysis
0 10

Sample Summary

SDG Number: 239856 Lab Sample ID: 239856008 Client ID: BAG-S-001 Batch ID: 919052 11/06/2009 22:15 Run Date: Prep Date: 11/06/2009 12:51 Data File: 9j531.d

10/23/2009 07:00 Date Collected: 10/27/2009 09:00 Date Received: ECOL007 Client: SW846 8260B Method: Leaoy Inst: RXY1 Analyst: Aliquot: 5 g Column: RTX-Volatiles

%Moisture: 25.9 ECOL00209 Project: GL-OA-E-038 SOP Ref: Dilution: 1 Purge Vol: 5 mL Final Volume: 5 mL Level: LOW

Matrix:

SOIL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	
74-87-3	Chloromethane	J	0.604	ng/kg	0.405	1.35	
75-01-4	Vinyl chloride	U	1.35	ug/kg	0.405	1.35	
74-83-9	Bromomethane	U	1.35	ug/kg	0.405	1.35	
75-00-3	Chloroethane	υ	1.35	ug/kg	0.405	1.35	
67-64-1	Acetone	J	4.89	ug/kg	2.24	6.75	
75-35-4	1,1-Dichloroethylene	ប	1.35	ug/kg	0.405	1.35	
75-09-2	Methylene chloride	υ	6.75	ug/kg	2.70	6.75	
75-15-0	Carbon disulfide	υ	6.75	ug/kg	1.69	6.75	
1634-04-4	tert-Butyl methyl ether	U	1.35	ug/kg	0.405	1.35	
156-60-5	trans-1,2-Dichloroethylene	υ	1.35	ug/kg	0.405	1.35	
108-05-4	Vinyl acetate	U	6.75	ug/kg	1.69	6.75	
75-34-3	1,1-Dichloroethane	U	1.35	ug/kg	0.405	1.35	
78-93-3	2-Butanone		48.1	ug/kg	2.02	6.75	
156-59-2	cis-1,2-Dichloroethylene	υ	1.35	ug/kg	0.405	1.35	
67-66-3	Chloroform	3	0.873	ug/kg	0.405	1.35	
71-55-6	1,1,1-Trichloroethane	υ	1.35	ug/kg	0.405	1.35	
56-23-5	Carbon tetrachloride	υ	1.35	ug/kg	0.405	1.35	
107-06-2	1,2-Dichloroethane	υ	1.35	ug/kg	0.405	1.35	
71-43-2	Benzene	υ	1.35	ug/kg	0.405	1.35	
79-01-6	Trichloroethylene	υ	1.35	ng/kg	0.445	1.35	
78-87-5	1,2-Dichloropropane	U	1.35	ug/kg	0.405	1.35	
75-27-4	Bromodichloromethane	υ.	1.35	ug/kg	0.405	1.35	
108-10-1	4-Methyl-2-pentanone	υ	6.75	ug/kg	1.69	6.75	
10061-01-5	cis-1,3-Dichloropropylene	ប	1.35	ug/kg	0.405	1.35	
08-88-3	Toluene	٠ ت	1.35	ug/kg	0.405	1.35	
0061-02-6	trans-1,3-Dichloropropylene	υ	1.35	ug/kg	0.405	1.35	
9-00-5	1,1,2-Trichloroethane	U	1.35	ug/kg	0.405	1.35	
91-78-6	2-Hexanone		6.94	ug/kg	2.02	6.75	
27-18-4	Tetrachloroethylene	U	1.35	ug/kg	0.405	1.35	
24-48-1	Dibromochloromethane	U	1.35	ug/kg	0.405	1.35	
08-90-7	Chlorobenzene	υ	1.35	ug/kg	0.405	1.35	
00-41-4	Ethylbenzene	υ	1.35	ug/kg	0.405	1.35	
00-42-5	Styrene	υ	1.35	ug/kg	. 0.405	1.35	
5-25-2	Bromoform	U	1.35	ug/kg	0.405	1.35	
9-34-5	1,1,2,2-Tetrachloroethane	U	1.35	ug/kg	0.405	1.35	
330-20-7	Xylenes (total)	-	1.56	ug/kg	0.405	1.35	

GEL Labor	atories LLC					Report	Date: Novembe	r 12, 2009
			Volat	tile			Page 1	of 1
		Cert	ificate o	f Analysis				
		Sa	mple St	mmary			-	
SDG Number:	239856	Date Col	lected:	10/23/2009 10:55	Matrix	::	SOIL	
Lab Sample ID:	239856009	Date Rec	eived:	10/27/2009 09:00	%Mois	sture:	16.9	
		Client:		ECOL007	Project		ECOL00209	
Client ID:	BAG-S-002	Method:	3	SW846 8260B	SOP R Dilutio		GL-OA-E-038	
Batch ID:	919052 11/05/2009 15:55	Inst: Analyst:		VOA9.1 RXY1	Purge		i 5 mL	
Run Date: Prep Date:	11/05/2009 09:43	Aliquot:		5 g	-	ron Jojume:		
Data File:	9j418.d	Column		RTX-Volatiles	Level:		LOW	
	•							,
CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL	LOQ .	
74-87-3	Chloromethane	υ	1.20	ug/kg	0.361	1.2	0	
75-01-4	Vinyl chloride	υ	1.20	ug/kg	0.361	1.2	0	
74-83-9	Bromomethane	υ	1.20	ug/kg	0.361	1.2	0	
75-00-3	Chloroethane	ΰ	1.20	ug/kg	0.361	1.2	0	
67-64-1	Acetone	j	3.96	ug/kg	2.00	6.0	1	
75-35-4	1,1-Dichloroethylene	บ	1.20	ug/kg	0.361	1.2		
75-09-2	Methylene chloride	U	6.01	ug/kg	2.41	6.0		
75-15-0	Carbon disulfide	υ	6.01	ug/kg	1.50	6.0		
1634-04-4	tert-Butyl methyl ether	. บ	1,20	ug/kg	0.361	1.2		
156-60-5	trans-1,2-Dichloroethylene	U	1.20	ug/kg	0.361	1.2		
108-05-4	Vinyl acetate	Ū	6.01	ug/kg	1.50	6.0		
75-34-3	1,1-Dichloroethane	υ	1.20	ug/kg	0.361	1.2		
78-93-3	2-Butanone	υ	6.01	ug/kg	1,80	6.0		
156-59-2	cis-1,2-Dichloroethylene	υ	1.20	ug/kg	0.361	1.20		
67-66-3	Chloroform	Ü	1.20	ug/kg	0.361	1.20	•	
71-55-6	1,1,1-Trichloroethane	Ü	1.20	ug/kg	0.361	1.2		
56-23-5	Carbon tetrachloride	υ	1.20	ug/kg	0.361	1.20)	
107-06-2	1,2-Dichloroethane	U	1.20	'ug/kg	0.361	1.20)	
71-43-2	Велгеле	U	1.20	ug/kg	0.361	1.20)	
79-01-6	Trichloroethylene	U	1.20	ug/kg	0.397	1.20)	
78-87-5	1,2-Dichloropropane	υ	1.20	ug/kg	0.361	1.20)	
75-27-4	Bromodichloromethane	U.	1.20	ug/kg	0.361	1.20)	
108-10-1	4-Methyl-2-pentanone	U	6.01	υg∕kg	1.50	6.0	\	
10061-01-5	cis-1,3-Dichloropropylene	U	1.20	ug/kg	0.361	1.20		
108-88-3	Toluene	U	1.20	ug/kg	0.361	1.20	,	
10061-02-6	trans-1,3-Dichloropropylene	U	1.20	ug/kg	0.361	1.20)	
79-00-5	1,1,2-Trichloroethane	U	1.20	ug/kg	0.361	1.20)	
591-78-6	2-Hexanone	บ	6.01	ug/kg	1.80	6.01	i	
127-18-4	Tetrachloroethylene	U	1.20	ug/kg	0.361	1,20		
124-48-1	Dibromochloromethane	U	1.20	ug/kg	0.361	1.20		
108-90-7	Chlorobenzene	บ	1:20	ug/kg	0.361	1.20		
100-41-4	Ethylbenzene	บ	1.20	ug/kg	0.361	1.20		
100-41-4	Styrene	U	1.20	ug/kg	0.361	1.20		
75-25-2	Вготоботп	บ	1.20	ug/kg	0.361	1.20		
79-34-5	1,1,2,2-Tetrachloroethane	บ	1.20	ug/kg	0.361	1.20		
1330-20-7	Xylenes (total)	υ	1.20	ug/kg	0.361	1.20		
3 J J U - Z U - I	Whenes from	J	1.50	OFLVE	0.003	1.20		

Report Date: November 12, 2009 Page 1

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Volatile
Certificate of Analysis
Sample Summary

10/23/2009 11:00 Matrix: Date Collected: SDG Number: 239856 10/27/2009 09:00 %Moisture: Lab Sample ID: 239856010 Date Received: Project: Client:

Column:

Method: Client ID: BAG-S-003 Inst: 919052 Batch ID: 11/05/2009 16:23 Analyst: Run Date:

Prep Date: 11/05/2009 09:44 Data File: 9j419.d

ECOL007 SW846 8260B Leaov RXY1 Aliquot: 5 g

RTX-Volatiles

ECOL00209 SOP Ref: GL-OA-E-038 Dilution: 1 Purge Vol: 5 mL Final Volume: 5 mL Level:

LOW

som

13.9

CAS No. Par	mname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-87-3 Chloro	methane	υ	1.16	ug/kg	0.348	1.16
75-01-4 Vinyl o	chloride	υ	1.16	ug/kg	0.348	1.16
74-83-9 Bromo	methane	U	1.16	ug/kg	0.348	1.16
75-00-3 Chloro	ethane	υ	1.16	ug/kg	0.348	1.16
67-64-1 Aceton	ne	υ	5.81	ug/kg	1.93	5.81
75-35-4 1,1-Did	chloroethylene	υ	1.16	ug/kg	0.348	1.16
75-09-2 Methyl	ene chloride	υ	5.81	ug/kg	2.32	5.81
75-15-0 Carbon	disulfide	U	5.81	ug/kg	1.45	5.83
1634-04-4 tert-Bu	tyl methyl ether	U	1.16	ug/kg	0.348	1.16
156-60-5 trans-1	,2-Dichloroethylene	υ	1.16	ug/kg	0.348	1.16
108-05-4 Vinyl a	cetate	υ	5.81	ug/kg	1.45	5.81
75-34-3 1,1-Dio	chloroethane	υ	1.16	ug/kg	0.348	1.16
78-93-3 2-Butai	none	U	5.81	ug/kg	1.74	5.81
156-59-2 cis-1,2-	Dichloroethylene	U	1.16	ug/kg	0.348	1.16
67-66-3 Chloro	form	υ	1.16	ug/kg	0.348	1.16
71-55-6 1,1,1-T	richloroethane	υ	1.16	′ug/kg	0.348	1,16
56-23-5 Carbon	tetrachloride	υ	1.16	ug/kg	0.348	1.16
107-06-2 1,2-Dic	hloroethane	v	1.16	ug/kg	0.348	1.16
71-43-2 Benzen	е	U	1.16	ug/kg	0.348	1.16
79-01-6 Trichlo	roethylene	υ	1.16	ug/kg	0.383	1.16
78-87-5 1,2-Die	hloropropane	υ	1.16	ug/kg	0.348	1.16
75-27-4 Bromod	dichloromethane	. U	1.16	ug/kg	- 0.348	1.16
108-10-1 4-Meth	yl-2-pentanone	U	5.81	ug/kg	1.45	5.81
10061-01-5 cis-1,3-	Dichloropropylene	U	1.16	ug/kg	0.348	1.16
108-88-3 Toluene	e	υ	1.16	ug/kg	0.348	1.16
10061-02-6 trans-1,	3-Dichloropropylene	U	1.16	ug/kg	0.348	1.16
79-00-5 1,1,2-T)	richloroethane	υ	1.16	ug/kg	0.348	1.16
591-78-6 2-Hexa	none	U	5.81	ug/kg	1.74	5.81
127-18-4 Tetrach	loroethylene	U	1.16	ug/kg	0.348	1.16
124-48-1 Dibrom	ochloromethane	U	1.16	ug/kg	0.348	1.16
108-90-7 Chlorob	penzene	υ	1.16	ug/kg	0.348	1.16
100-41-4 Ethylbe	nzene	U	1.16	ug/kg	0.348	1.16
100-42-5 Styrene		υ	1.16	ug/kg	0.348	1.16
75-25-2 Bromof	orm	υ	1.16	ug/kg	0.348	1.16
9-34-5 1,1,2,2-	Tetrachloroethane	υ	1.16	ug/kg	0.348	1.16
330-20-7 Xylenes	(total)	υ	1.16	ug/kg	0.348	1.16

11/04/2009 18:00

11/04/2009 13:40

9j321.d

SDG Number: 239856

Client ID:

Batch ID:

Run Date:

Prep Date:

Data File:

of 1

Volatile						
Certificate of Analysis						
Sample Summary						

10/22/2009 08:10 Matrix: Date Collected:

Lab Sample ID: 239856001 Client: Method: SME-S-001 Inst: 919052

Date Received: 10/27/2009 09:00 ECOL007 SW846 8260B I.eaov Analyst: RXY1

5 g

RTX-Volatiles

Aliquot:

Column:

SOP Ref: GL-OA-E-038 Dilution: 1 Purge Vol: 5 mL Final Volume: 5 mL LOW Level;

%Moisture:

Project:

sol

ECOL00209

28.3

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	
74-87-3	Chloromethane	U	1.40	ug/kg	0.419	1.40	
75-01-4	Vinyl chloride	U	1.40	ug/kg	0.419	1.40	
74-83-9	Bromomethane	บ	1,40	ug/kg	0.419	1.40	
75-00-3	Chloroethane	ប	1.40	ug/kg	0.419	1.40	
67-64-1	Acetone	J	3.55	ug/kg	2.32	6.98	
75-35-4	1,1-Dichloroethylene	υ	1.40	ug∕kg	0.419	1.40	
75-09-2	Methylene chloride	U	6.98	ug/kg	2.79	6.98	
75-15-0	Carbon disulfide	υ	6.98	ng/kg	1.74	6.98	
1634-04-4	tert-Butyl methyl ether	υ	1.40	ug/kg	0.419	1.40	
156-60-5	trans-1,2-Dichloroethylene	' υ	1.40	ug/kg	0.419	1.40	
108-05-4	Vinyl acetate	υ	6.98	ug/kg	1.74	6.98	
75-34-3	1,1-Dichloroethane	U	1.40	ug/kg	0.419	1.40	
78-93-3	2-Butanone	υ	6.98	ug/kg	2.09	6.98	
156-59-2	cis-1,2-Dichloroethylene	U	1.40	ug/kg	0.419	1.40	
67-66-3	Chloroform	J	0.519	ug/kg	0.419	1.40	
71-55-6	1,1,1-Trichloroethane	U	1.40	ug/kg	0.419	1.40	
56-23-5	Carbon tetrachloride	ប	1.40	ug/kg	0.419	1.40	
107-06-2	1,2-Dichloroethane	υ	1.40	ug/kg	0.419	1.40	
11-43-2	Benzene	υ	1,40	ug/kg	0.419	1.40	
19-01-6	Trichioroethylene	U	1.40	ug/kg	0.460	1.40	
78-87 - 5	1,2-Dichloropropane	υ	1.40	ug/kg	0.419	1.40	
15-27-4	Bromodichloromethane	. ប	1.40	ug/kg .	0.419	1.40	
08-10-1	4-Methyl-2-pentanone	บ	6.98	ug/kg	1.74	6.98	
0061-01-5	cis-1,3-Dichloropropylene	ប	1.40	ug/kg	0.419	1.40	
08-88-3	Toluene	υ	1.40	ug/kg	0.419	1.40	
0061-02-6	trans-1,3-Dichloropropylene	υ	1.40	ug/kg	0.419	1.40	
9-00-5	1,1,2-Trichloroethane	υ	1.40	ug/kg	0.419	1.40	
91-78-6	2-Нехаполе	U	6.98	ug/kg	2.09	6.98	
27-18-4	Tetrachloroethylene	υ	1.40	ug/kg	0.419	1.40	
24-48-1	Dibromochloromethane	υ	1.40	ug/kg	0.419	1.40	
08-90-7	Chlorobenzene	υ	1.40	ug/kg	0.419	1.40	
00-41-4	Ethylbenzene	U	1.40	ug/kg	0.419	1.40	
00-42-5	Styrene	υ	1.40	ug/kg	0.419	1.40	
5-25-2	Bromoform	υ	1.40	ug/kg	0.419	1.40	
9-34-5	1,1,2,2-Tetrachloroethane	υ	1.40	ug/kg	0.419	1.40	
330-20-7	Xylenes (total)	υ	1.40	ug/kg	0.419	1.40	

Lab Sample ID: 239856002

SDG Number:

Client ID:

Batch ID:

Run Date:

239856

SM0E-S-002

11/04/2009 18:28

919052

 $5 \, \mathrm{mL}$

Vola	itile		Page 1 (of I
Certificate	of Analysis			
Sample S	ummary			
Date Collected:	10/23/2009 10:30	Matrix:	SOIL	
Date Received:	10/27/2009 09:00	%Moisture:	16.5	
Client:	ECOL007	Project:	ECOL00209	
Method:	SW846 8260B	SOP Ref:	GL-OA-E-038	
Inst:	VOA9.I	Dilution:	1	

Purge Vol:

Final Volume: 5 mL

11/04/2009 13:41 Prep Date: **RTX-Volatiles** LOW Column: Level: Data File; 9j322.d Units MDL/LOD PQL/LOQ Qualifier Result CAS No. Parmname U 1.20 US 0.359 1.20 ug/kg 74-87-3 Chloromethane U 0.359 1.20 Vinyl chloride 1.20 ug/kg 75-01-4 U 1.20 ug/kg 0.359 1.20 74-83-9 Bromomethane U 1.20 0.359 1,20 75-00-3 Chloroethane ug/kg J 1.99 5.99 3 4.16 ug/kg 67-64-1 Acetone U 0.359 1.20 1.20 ug/kg 75-35-4 1,1-Dichloroethylene U 5.99 ug/kg 2.40 5.99 75-09-2 Methylene chloride 5.99 75-15-0 Carbon disulfide U 5.99 ug/kg 1.50 U 1.20 0.359 1.20 ug∕kg tert-Butyl methyl ether 1634-04-4 U 0.359 1.20 trans-1,2-Dichloroethylene 1.20 ug/kg 156-60-5 108-05-4 Vinyl acetate υ 5.99 ug/kg 1.50 5.99 υ 1.20 0.359 1.20 ug/kg 75-34-3 1,1-Dichloroethane J 2.10 5.99 J ug/kg 1.80 78-93-3 2-Butanone 1.20 () 5 cis-1,2-Dichloroethylene υ ug/kg 0.359 1.20 0.359 1.20 Chloroform U 1.20 ug/kg U 1.20 ug/kg 0.359 1.20 1,1,1-Trichloroethane υ 0.359 1.20 Carbon tetrachloride 1.20 ug/kg U 0.359 1.20 1,2-Dichloroethane 1.20 ug/kg U 0.359 1.20 1.20 ug/kg Benzene U 0.395 1.20 1.20 ug/kg Trichloroethylene

Analyst:

Aliquot:

RXY1

5 g

156-59-2 67-66-3 71-55-6 56-23-5 107-06-2 71-43-2 79-01-6 υ 1.20 ug/kg 0.359 1.20 78-87-5 1,2-Dichloropropane U 0.359 1.20 1.20 75-27-4 Bromodichloromethane ug/kg 5.99 108-10-1 υ 5.99 ug/kg 1,50 4-Methyl-2-pentanone cis-1,3-Dichloropropylene U 1.20 ug/kg 0.359 1.20 10061-01-5 0.359 1.20 υ 1.20 ug/kg 108-88-3 Toluene 0.359 υ 1.20 10061-02-6 trans-1,3-Dichloropropylene 1.20 ug/kg U 1.20 0.359 1.20 79-00-5 1,1,2-Trichloroethane ug/kg U 1.80 5.99 5.99 ug/kg 591-78-6 2-Hexanone 0.359 127-18-4 Tetrachloroethylene U 1.20 ug/kg 1.20 U 0.359 1.20 124-48-1 Dibromochloromethane 1.20 ug/kg U 0.359 1.20 1.20 ug/kg 108-90-7 Chlorobenzene 0.359 1.20 Ethylbenzene U 1.20 ug/kg 100-41-4 100-42-5 Styrene U 1.20 ug/kg 0.359 1.20 1.20 U 0.359 Bromoform 1.20 ug/kg 75-25-2 υ 1.20 0.359 1.20 1,1,2,2-Tetrachloroethane ug/kg 79-34-5 U 0.359 1.20 1.20 ug/kg 1330-20-7 Xylenes (total)

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Vola	ıtile		
Certificate	of Analysis		
Sample S	Summary		
te Collected:	10/23/2009 10:35	Matrix:	S

SDG Number:	239856	Date Collected:	10/23/2009 10:35	Matrix:	son
Lab Sample ID:	239856003	Date Received:	10/27/2009 09:00	%Moisture:	16.9
		Client:	ECOL007	Project:	ECOL00209
Client ID:	SME-S-003	Method:	SW846 8260B	SOP Ref:	GL-OA-E-038
Batch ID:	919052	Inst:	Leaov	Dilution:	1
Run Date:	11/04/2009 18:55	Analyst:	RXY1	Purge Vol:	5 mL
Prep Date:	11/04/2009 13:44	Aliquot:	5 g .	Final Volume:	5 mL
Data File:	9j323.d	Column;	RTX-Volatiles	Level:	row

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	
74-87-3	Chloromethane	U	1.20 UJ	ug/kg	0.361	1.20	-
75-01-4	Vinyl chloride	ប	1.20	ug/kg	0.361	1.20	٠
74-83-9	Bromomethane	υ	1.20	ug/kg	0.361	1.20	
75-00-3	Chloroethane	U	1.20	ug/kg	0.361	1,20	
67-64-1	Acetone		50.7 J	ug/kg	2.00	6.02	
75-35-4	1,1-Dichloroethylene	U	1.20 VJ	ug/kg	0.361	1.20	
75-09-2	Methylene chloride		7.29 丁	ug/kg	2.41	6.02	•
75-15-0	Carbon disulfide		31.8 J	ug/kg	1.50	6.02	
1634-04-4	tert-Buty) methyl ether	U	1.20 UJ	ug/kg	0.361	1.20	
156-60-5	trans-1,2-Dichloroethylene	υ	1.20	ug/kg ´	0.361	1.20	
108-05-4	Vinyl acetate	U	6.02	ug/kg	1.50	6.02	
75-34-3	1,1-Dichloroethane	U	1.20 ₺	ug/kg	0.361	1.20	
78-93-3	2-Bulanone		90.5 丁	ug/kg	1.81	6.02	
156-59-2	cis-1,2-Dichloroethylene	υ	1.20 UJ	ug/kg	0.361	1.20	
67-66-3	Chloroform	U	1,20	ug/kg	0.361	1.20	
71-55-6	1,1,1-Trichloroethane	υ	1.20	ug/kg	0.361	1.20	
56-23-5	Carbon tetrachloride	U	1.20	ug/kg	0.361	1.20	
107-06-2	1,2-Dichloroethane	U	1.20	ug/kg	0.361	1.20	
71-43-2	Benzene	U	1.20	ug/kg	0.361	1.20	
79-01-6	Trichloroethylene	U	1.20	ug/kg	0.397	1.20	
78-87-5	1,2-Dichloropropane	U	1.20	ug/kg	0.361	1.20	
75-27-4	Bromodichloromethane	υ	1.20	ug/kg	0.361	1.20	
108-10-1	4-Methyl-2-pentanone		21.1 J	ug/kg	1.50	6.02	
10061-01-5	cis-1,3-Dichloropropylene	U	1.20 VI	υg∕kg	0.361	1.20	
108-88-3	Toluene	J	0.688 J	ug/kg	0.361	1.20	
10061-02-6	trans-1,3-Dichloropropylene	υ	1.20 レブ	ug/kg	0.361	1.20	
79-00-5	1,1,2-Trichloroethane	υ	1.20 レゴ	ug/kg	0.361	1.20	•
591-78-6	2-Hexanone		15.7 🍑	ug/kg	1.81	6.02	
127-18-4	Tetrachloroethylene	U	1.20 リブ	ug/kg	0.361	1.20	
124-48-1	Dibromochloromethane	υ	1.20	ug/kg	0.361	1.20	
108-90-7	Chlorobenzene	U	1.20	ug/kg	0.361	1.20	
100-41-4	Ethylbenzene	υ	1.20	ug/kg	0.361	1.20	
100-42-5	Styrene		3.68 J	ug/kg	0.361	1.20	
75-25-2	Bromoform	U	1.20 VJ	ug/kg	0.361	1.20	
79-34-5	1,1,2,2-Tetrachloroethane	υ	1.20 レブ	ug/kg	0.361	1.20	
1330-20-7	Xylenes (total)	J	0.502 了	ug/kg	0.361	1.20	•

12/7/08

of 1

Volatile						
Certificate of Analysis						
Sample Summary						

Date Collected: 10/23/2009 10:42 Matrix: SOIL SDG Number: 239856 10/27/2009 09:00 18.6 %Moisture: Lab Sample ID: 239856006 Date Received: ECOL007 Project: ECOL00209 Client: SOP Ref: Method: SW846 8260B GL-OA-E-038 Client ID: SME-S-005 Leaoy Dilution: 1

Inst: Batch ID: 919052 RXY1 Purge Vol: Run Date: 11/06/2009 21:47 Analyst: $5 \, \mathrm{mL}$ Final Volume: 5 mL Aliquot: Prep Date: 11/06/2009 12:50 5 g LOW Data File: 9j530.d Column: RTX-Volatiles Level:

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	
4-87-3	Chloromethane	υ	1.23	ug/kg	0.368	1.23	
5-01-4	Vinyl chloride	υ	1.23	ug/kg	0.368	1.23	
4-83-9	Bromomethane	υ	1.23	ug/kg	0.368	1.23	
5-00-3	Chloroethane	υ	1.23	u <i>g/</i> kg	0.368	1.23	
7-64-1	Acetone	J	4.83	ug/kg	2.04	6.14	
5-35-4	1,1-Dichloroethylene	υ	1.23	ug/kg	0.368	1.23	
5-09-2	Methylene chloride	U	6.14	ug/kg	2.46	6.14	
5-15-0	Carbon disulfide	υ	6.14	ug/kg	1.54	6.14	
634-04-4	tert-Butyl methyl ether	υ	1.23	ug/kg	0.368	1.23	
56-60-5	trans-1,2-Dichloroethylene	U	1.23	ug/kg	0.368	1.23	
08-05-4	Vinyl acetate	υ	6.14	ug/kg	1.54	6.14	
5-34-3	1,1-Dichloroethane	υ	1.23	ug/kg	0.368	1.23	
8-93-3	2-Butanone	υ	6.14	ug/kg	1.84	6.14	
56-59-2	cis-1,2-Dichloroethylene	U	1.23	ug/kg	0.368	1.23	
7-66-3	Chloroform	υ	1.23	ug/kg	0.368	1.23	
1-55-6	1,1,1-Trichloroethane	ប	1.23	ug/kg	0.368	1,23	
5-23-5	Carbon tetrachloride	υ	1.23	ug/kg	0.368	1.23	
07-06-2	1,2-Dichloroethane	υ	1.23	ug/kg	0.368	1.23	
I-43-2	Benzene	U	1.23	ug/kg	0.368	1.23	
9-01-6	Trichloroethylene	U	1.23	ug/kg	0.405	1.23	
3-87-5	1,2-Dichloropropane	υ	1.23	ug/kg	0.368	1.23	
5-27-4	Bromodichloromethane	U	1.23	· ug/kg	0.368	1.23	
8-10-1	4-Methyl-2-pentanone	U	6.14	ug/kg	1.54	6.14	
061-01-5	cis-1,3-Dichloropropylene	υ	1.23	ug/kg	0.368	1.23	
8-88-3	Toluene	U	1.23	ug/kg	0.368	1.23	
0061-02-6	trans-1,3-Dichloropropylene	U	1.23	ug/kg	0.368	1.23	
-00-5	1,1,2-Trichloroethane	υ	1.23	ug/kg	0.368	1.23	
1-78-6	2-Hexanone	ប	6.14	ug/kg	1.84	6.14	
7-18-4	Tetrachloroethylene	υ	1.23	ug/kg	0.368	1.23	
4-48-1	Dibromochloromethane	υ	1.23	ug/kg	0.368	1.23	
8-90-7	Chlorobenzene	U	1.23	ug/kg	0.368	1.23	
0414	Ethylbenzene	U	1.23	ug/kg	0.368	1.23	
0-42-5	Styrene	U	1.23	ug/kg	0.368	1.23	
-25-2	Bromoform	υ	1.23	ug/kg	0.368	1,23	
-34-5	1,1,2,2-Tetrachloroethane	υ	1.23	ug/kg	0.368	1.23	
30-20-7	Xylenes (total)	υ	1.23	ug/kg	0.368	1.23	

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Volatile						
Certificate of Analysis						
Samule Summary						

son Matrix: SDG Number: 239856 Date Collected: 10/23/2009 11:10 Lab Sample ID: 239856007 Date Received: 10/27/2009 09:00 %Moisture: 21 ECOL00209 Client: ECOL007 Project: GL-OA-E-038 SOP Ref: Method: SW846 8260B SME-S-006 Client ID: Dilution: 1 Inst: I.EAOV 919052 Batch ID: 11/05/2009 15:00 RXY1 Purge Vol: 5 mL Analyst: Run Date: Final Volume: 5 mL Aliquot: 5 g 11/05/2009 09:41 Prep Date: RTX-Volatiles LOW Level: Column: Data File: 9j416.d

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	
74-87-3	Chloromethane		3.01	υg/kg	0.380	1.27	
75-01-4	Vinyl chloride	υ	1.27	ug/kg	0.380	1.27	
74-83-9	Bromomethane	υ	1.27	ug/kg	0.380	1.27	
75-00-3	Chloroethane	ប	1.27	ug/kg	0.380	1.27	
67-64-1	Acetone	J	5.01	ug/kg	2.10	6.33	
75-35-4	1,1-Dichloroethylene	บ	1.27	ug/kg	0.380	1.27	
75-09-2	Methylene chloride	υ	6.33	ug/kg	2.53	6.33	
75-15-0	Carbon disulfide	υ	6.33	ug/kg	1.58	6.33	
1634-04-4	tert-Butyl methyl ether	υ	1.27	ug/kg	0.380	1.27	
156-60-5	trans-1,2-Dichloroethylene	U	1.27	ug/kg	0.380	1.27	
108-05-4	Vinyl acetate	ប	6.33	ug/kg	1.58	6.33	
75-34-3	1,1-Dichloroethane	υ	1.27	ug/kg	0.380	1.27	
78-93-3	2-Butanone	υ	6.33	ug/kg	1.90	6.33	
156-59-2	cis-1,2-Dichloroethylene	U	1.27	ug/kg	0.380	1.27	
67-66-3	Chleroform	υ	1.27	ug/kg	0.380	1.27	
71-55-6	1,1,1-Trichloroethane	U	1.27	ug/kg	0.380	1.27	
56-23-5	Carbon tetrachloride	υ	1.27	ug/kg	0.380	1.27	
107-06-2	1,2-Dichloroethane	U	1.27	ug/kg	0.380	1.27	
71-43-2	Benzene	υ	1.27	ug/kg	0.380	1.27	
79-01-6	Trichloroethylene	U	1.27	ug/kg	0.418	1.27	
78-87-5	1,2-Dichloropropane	υ	1.27	ug/kg	0.380	1.27	
75-27-4	Bromodichloromethane	U	1.27	ug/kg	0.380	1.27	
108-10-1	4-Methyl-2-pentanone	υ	6.33	ug/kg	1.58	6.33	
10061-01-5	cis-1,3-Dichloropropylene	U	1.27	ug/kg	0.380	1.27	
108-88-3	Toluene	υ	1.27	ug/kg	0.380	1.27	
10061-02-6	trans-1,3-Dichloropropylene	υ	1.27	ug/kg	0.380	1.27	
79-00-5	1,1,2-Trichloroethane	U	1.27	ug/kg	0.380	1.27	
591-78-6	2-Hexanone	U	6.33	ug/kg	1.90	6.33	
127-18-4	Tetrachloroethylene	υ	1.27	ug/kg	0.380	1.27	
124-48-1	Dibromochloromethane	υ	1.27	ug/kg	0.380	1.27	
108-90-7	Chlorobenzene	U	1.27	ug/kg	0.380	1.27	
100-41-4	Ethylbenzene	υ	1.27	ug/kg	0.380	1.27	
100-42-5	Styrene	υ	1.27	ug/kg	0.380	1.27	
75-25-2	Bromoform	U	1.27	ug/kg	0.380	1.27	
79-34-5	1,1,2,2-Tetrachloroethane	υ	1.27	ug/kg	0.380	1.27	
1330-20-7	Xylenes (total)	υ	1.27	ug/kg	0.380	1.27	

12/7/08

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Volatile					
Certificate of Analysis					
Sample Summary					

			•		
SDG Number:	239856	Date Collected:	10/23/2009 10:37	Matrix:	SOIL
Lab Sample ID:	239856004	Date Received:	10/27/2009 09:00	%Moisture:	17.1
ZZZ DZZZPIO ZZZ		Client:	ECOL007	Project:	ECOL00209
Client ID:	SME-S-1003	Method:	SW846 8260B	SOP Ref:	GL-OA-E-038
Batch ID;	919052	Inst:	Leaov	Dilution:	1
Run Date:	11/04/2009 19:23	Analyst:	RXY1	Purge Vol:	5 mL
Prep Date:	11/04/2009 13:45	Aliquot:	5 g	Final Volume:	5 mL
Data File:	·9[324.đ	Column:	RTX-Volatiles	Level:	LOW

74-87-3	CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	
Table Tabl	74-87-3	Chloromethane	υ	1,21 UJ	ug/kg	0.362	1.21	
1.21	75-01-4	Vinyl chloride	· U	1.21	ug/kg	0.362	1.21	
Chrotestante Chro	74-83-9	Bromomethane	υ	1.21	ug/kg	0.362	1.21	
1.1.Dichloroechylene	75-00-3	Chloroethane	υ	1.21 U	ug/kg	0.362	1.21	
75-09-2 Methylene chloride	67-64-1	Acetone		23.7 J	ug/kg	2.00	6.03	
75-15-0 Carbon disulfide	75-35-4	1,1-Dichloroethylene	υ		ug/kg	0.362	1.21	
1634-044 tert-Butyl methyl ether U 1.21 U Jug/kg 0.362 1.21 156-60-5 trans-1,2-Dichlorocthylene U 1.21 ug/kg 0.362 1.21 108-05-4 Vinyl acetate U 6.03 ug/kg 0.362 1.21 75-34-3 1,1-Dichlorocthane U 1.21 ug/kg 0.362 1.21 78-93-3 2-Butanone 47.5 ug/kg 1.81 6.03 156-59-2 clis-1,2-Dichlorocthylene U 1.21 ug/kg 0.362 1.21 67-66-3 Chloroform U 1.21 ug/kg 0.362 1.21 71-55-6 1,1,1-Trichlorocthane U 1.21 ug/kg 0.362 1.21 107-66-2 1,2-Dichlorocthane U 1.21 ug/kg 0.362 1.21 79-01-6 Trichlorocthylene U 1.21 ug/kg 0.362 1.21 78-87-5 1,2-Dichloropropane U 1.21 ug/kg 0.362 1.21 108-10-1 4-Methyl-2-pentanoe 13.6 ug/kg <t< td=""><td>75-09-2</td><td>Methylene chloride</td><td></td><td></td><td>ug/kg</td><td>2.41</td><td>6.03</td><td></td></t<>	75-09-2	Methylene chloride			ug/kg	2.41	6.03	
136-60-5	75-15-0	Carbon disulfide			ug/kg	1.51	6.03	
108-05-3	1634-04-4	tert-Butyl methyl ether	U	1.21 U J	ug/kg	0.362	1.23	
1.1-Dichloroethane	156-60-5	trans-1,2-Dichloroethylene	υ	1.21	ug/kg	0.362	1.21	
78-93-3 2-Butanone 47.5 Jug/kg 1.81 6.03 156-59-2 cis-1,2-Dichloroethylene U 1.21 U yg/kg 0.362 1.21 67-66-3 Chloroform U 1.21 ug/kg 0.362 1.21 71-55-6 1,1,1-Trichloroethane U 1.21 ug/kg 0.362 1.21 56-23.5 Carbon tetrachloride U 1.21 ug/kg 0.362 1.21 107-06-2 1,2-Dichloroethane U 1.21 ug/kg 0.362 1.21 71-43-2 Benzene U 1.21 ug/kg 0.362 1.21 79-01-6 Trichloroethylene U 1.21 ug/kg 0.362 1.21 78-87-5 1,2-Dichloropropane U 1.21 ug/kg 0.362 1.21 108-10-1 4-Methyl-2-pentanone 13.6 ug/kg 0.362 1.21 108-10-1 4-Methyl-2-pentanone 13.6 U 1.21 U 1.21 U	108-05-4	Vinyl acetate	ឋ	6.03		1.51	6.03	
78-93-3 2-Butanone 47.5	75-34-3	1,1-Dichloroethane	ប	1.21 🎶	ug/kg	0.362	1.21	
67-66-3 Chloroform U 1.21 ug/kg 0.362 1.21 71-55-6 1,1,1-Trichloroethane U 1.21 ug/kg 0.362 1.21 56-23-5 Carbon tetrachloride U 1.21 ug/kg 0.362 1.21 107-06-2 1,2-Dichloroethane U 1.21 ug/kg 0.362 1.21 71-43-2 Benzene U 1.21 ug/kg 0.362 1.21 79-01-6 Trichloroethylene U 1.21 ug/kg 0.362 1.21 78-87-5 1,2-Dichloropropane U 1.21 ug/kg 0.362 1.21 75-27-4 Bromodichloromethane U 1.21 ug/kg 0.362 1.21 108-10-1 4-Methyl-2-pentanone		2-Butanone		_	ug/kg	1.81	6.03	
71-55-6 1,1,1-Trichloroethane U 1.21 ug/kg 0.362 1.21 107-06-2 1,2-Dichloroethane U 1.21 ug/kg 0.362 1.21 107-06-2 1,2-Dichloroethane U 1.21 ug/kg 0.362 1.21 71-43-2 Benzene U 1.21 ug/kg 0.362 1.21 79-01-6 Trichloroethylene U 1.21 ug/kg 0.362 1.21 78-87-5 1,2-Dichloropropane U 1.21 ug/kg 0.362 1.21 108-10-1 4-Methyl-2-pentanone U 1.21 ug/kg 0.362 1.21 108-10-1 4-Methyl-2-pentanone U 1.21 Ug/kg 0.362 1.21 108-88-3 Toluen J 0.444 T ug/kg 0.362 1.21 108-88-3 Toluen U 1.21 Ug/kg 0.362 1.21 10061-02-6 trans-1,3-Dichloropropylene U 1.21 U ug/kg 0.362 1.21 10061-02-6 trans-1,3-Dichloropropylene U 1.21 U ug/kg 0.362 1.21 107-00-5 1,1,2-Trichloroethane U 1.21 U ug/kg 0.362 1.21 107-18-4 Tetrachloroethylene U 1.21 U ug/kg 0.362 1.21 108-90-7 Chlorobenzene U 1.21 U ug/kg 0.362 1.21 108-90-7 Chlorobenzene U 1.21 ug/kg 0.362 1.21 100-41-4 Ethylbenzene U 1.21 U ug/kg 0.362 1.21 100-42-5 Styrene 1.92 T ug/kg 0.362 1.21 10-43-5 1,1,2-Trichloroethane U 1.21 U ug/kg 0.362 1.21 10-45-5 Styrene 1.92 T ug/kg 0.362 1.21 10-47-55-2 Bromoform U 1.21 U ug/kg 0.362 1.21 10-48-5 Styrene 1.92 T ug/kg 0.362 1.21 10-49-5 1,1,2-Trichloroethane U 1.21 U ug/kg 0.362 1.21 10-41-5 Styrene 1.92 T ug/kg 0.362 1.21 10-41-5 Styrene 1.92 T ug/kg 0.362 1.21 10-41-7-45-7-45-7-45-7-45-7-45-7-45-7-45-7	156-59-2	cis-1,2-Dichloroethylene	υ	1.21 UJ	ug/kg	0.362	1.21	
1.1. 1.1. 1.2.	67-66-3	Chloroform	U	1.21	ug/kg	0.362	1.21	
107-06-2 1,2-Dichloroethane U 1,21 Ug/kg 0,362 Ug/kg 0,362 Ug/kg 0,362 Ug/kg Ug/kg 0,362	71-55-6	1,1,1-Trichloroethane	υ	1.21	ug/kg	0,362	1.21	
1.21	56-23-5	Carbon tetrachloride	υ	1.21	ug/kg	0.362	1.21	•
79-01-6 Trichloroethylene U 1.21 ug/kg 0.362 1.21 78-87-5 1,2-Dichloropropane U 1.21 ug/kg 0.362 1.21 75-27-4 Bromodichloromethane U 1.21 ug/kg 0.362 1.21 108-10-1 4-Methyl-2-pentanone 13.6 Jug/kg 1.51 6.03 10061-01-5 cis-1,3-Dichloropropylene U 1.21 U 10g/kg 0.362 1.21 108-88-3 Toluene J 0.444 Jug/kg 0.362 1.21 10061-02-6 trans-1,3-Dichloropropylene U 1.21 U 10g/kg 0.362 1.21 10061-02-6 trans-1,3-Dichloropropylene U 1.21 U 10g/kg 0.362 1.21 109-10-5 1,1,2-Trichloroethane U 1.21 U 10g/kg 0.362 1.21 101-11-11-11-11-11-11-11-11-11-11-11-11-	107-06-2	1,2-Dichloroethane	ប	1.21	ug/kg	0.362	1.21	
78-87-5 1,2-Dichloropropane U 1.21 ug/kg 0.362 1.21 75-27-4 Bromodichloromethane U 1.21 ug/kg 0.362 1.21 108-10-1 4-Methyl-2-pentanone 13.6 ∫ ug/kg 1.51 6.03 10061-01-5 cis-1,3-Dichloropropylene U 1.21 UJ ug/kg 0.362 1.21 108-88-3 Toluene J 0.444 J ug/kg 0.362 1.21 10061-02-6 trans-1,3-Dichloropropylene U 1.21 UJ ug/kg 0.362 1.21 79-00-5 1,1,2-Trichloroethane U 1.21 U ug/kg 0.362 1.21 591-78-6 2-Hexanone 10.3 J ug/kg 1.81 6.03 127-18-4 Tetrachloroethylene U 1.21 U ug/kg 0.362 1.21 124-48-1 Dibromochloromethane U 1.21 U ug/kg 0.362 1.21 108-90-7 Chlorobenzene U 1.21 ug/kg 0.362 1.21 108-90-7 Chlorobenzene U 1.21 ug/kg 0.362 1.21 100-41-4 Ethylbenzene U 1.21 ug/kg 0.362 1.21 100-42-5 Styrene 1.92 J ug/kg 0.362 1.21 79-34-5 1,1,2,2-Tetrachloroethane U 1.21 ug/kg 0.362 1.21 109/kg 0.362 1.21 100-41-5 Styrene 1.92 J ug/kg 0.362 1.21 100-42-5 Bromoform U 1.21 U ug/kg 0.362 1.21 100-43-5 U ug/kg 0.362 1.21 100-44-5 U ug/kg 0.362 1.21 100-45-5 U ug/kg 0.362 1.21 100-47-5 U ug/kg 0.362 1.21 100-48-5 U ug/kg 0.362 1.21 100-48-5 U ug/kg 0.362 1.21 100-49-5 U ug/kg 0.362 1.21	71-43-2	Benzene	U	1.21	ug/kg	0.362	1.21	
1.21	79-01-6	Trichloroethylene	ប	1.21	ug/kg	0.398	1.21	
108-10-1	78-87-5	1,2-Dichloropropane	U	1.21	ug/kg	0.362	1.21	
10061-01-5 cis-1,3-Dichloropropylene U 1.21 \(\sum \sum \sum \sug \text{log/kg} \) 0.362 1.21 108-88-3 Toluene J 0.444 \(\sum \sum \sug \sug \text{log/kg} \) 0.362 1.21 10061-02-6 trans-1,3-Dichloropropylene U 1.21 \(\sum \sum \sug \sug \text{log/kg} \) 0.362 1.21	75-27-4	Bromodichloromethane	υ	1.21 V	ug/kg	0.362	1.21	
108-88-3 Toluene	108-10-1	4-Methyl-2-pentanone			ug/kg	1.51	6.03	
10061-02-6 trans-1,3-Dichloropropylene U . 1.21 UJ ug/kg 0.362 1.21 79-00-5 1,1,2-Trichloroethane U 1.21 ↓ ug/kg 0.362 1.21 591-78-6 2-Hexanone 10.3 J ug/kg 1.81 6.03 127-18-4 Tetrachloroethylene U 1.21 UJ ug/kg 0.362 1.21 124-48-1 Dibromochloromethane U 1.21 ↓ ug/kg 0.362 1.21 108-90-7 Chlorobenzene U 1.21 ↓ ug/kg 0.362 1.21 100-41-4 Ethylbenzene U 1.21 ↓ ug/kg 0.362 1.21 100-42-5 Styrene 1.92 J ug/kg 0.362 1.21 75-25-2 Bromoform U 1.21 UJ ug/kg 0.362 1.21 79-34-5 1,1,2,2-Tetrachloroethane U 1.21 ↓ ug/kg 0.362 1.21	10061-01-5	cis-1,3-Dichloropropylene	υ	1.21 レゴ	ug/kg	0.362	1.21	
79-00-5 1,1,2-Trichloroethane U 1.21	108-88-3	Toluene	J	0.444 J	ug/kg	0.362	1.21	
10.3 127-18-6 2-Hexanone 10.3 129/kg 1.81 6.03 127-18-4 Tetrachloroethylene U 1.21 U 1.21 U 1.21 U 1.21 108-90-7 Chlorobenzene U 1.21 U 1.21 U 1.21 100-41-4 Ethylbenzene U 1.21 U 1.21 U 1.21 100-42-5 Styrene 1.92 U 1.21 U 1.21 100-45 Bromoform U 1.21 U 1.21 U 1.21 100-45 1.21 U 1.21 U 1.21 U 1.21 100-42-5 1.21 U 1.21 U 1.21 U 1.21 100-42-5 1.21 U 1.21	10061-02-6	trans-1,3-Dichloropropylene	υ.		ug/kg	0.362	1.21	
127-18-4 Tetrachloroethylene U 1.21 U J ug/kg 0.362 1.21 124-48-1 Dibromochloromethane U 1.21 ug/kg 0.362 1.21 108-90-7 Chlorobenzene U 1.21 ug/kg 0.362 1.21 100-41-4 Ethylbenzene U 1.21 ug/kg 0.362 1.21 100-42-5 Styrene 1.92 J ug/kg 0.362 1.21 75-25-2 Bromoform U 1.21 UJ ug/kg 0.362 1.21 79-34-5 1,1,2,2-Tetrachloroethane U 1.21 ug/kg 0.362 1.21	79-00-5	1,1,2-Trichloroethane	υ	1.21	ug/kg	0.362	1.21	
127-18-4 Tetrachloroethylene U 1.21 U J ug/kg 0.362 1.21 124-48-1 Dibromochloromethane U 1.21 ug/kg 0.362 1.21 108-90-7 Chlorobenzene U 1.21 ug/kg 0.362 1.21 100-41-4 Ethylbenzene U 1.21 ug/kg 0.362 1.21 100-42-5 Styrene 1.92 J ug/kg 0.362 1.21 75-25-2 Bromoform U 1.21 U J ug/kg 0.362 1.21 79-34-5 1,1,2,2-Tetrachloroethane U 1.21 ug/kg 0.362 1.21	591-78-6	2-Нехаполе			ug/kg	1.81	6.03	
124-48-1 Dibromochloromethane U 1.21 ug/kg 0.362 1.21 108-90-7 Chlorobenzene U 1.21 ug/kg 0.362 1.21 100-41-4 Ethylbenzene U 1.21 ug/kg 0.362 1.21 100-42-5 Styrene 1.92 U ug/kg 0.362 1.21 75-25-2 Bromoform U 1.21 U 0.362 1.21 79-34-5 1,1,2,2-Tetrachloroethane U 1.21 ug/kg 0.362 1.21		Tetrachloroethylene	υ	1.21 05	ug/kg	0.362	1.21	
100-41-4 Ethylbenzene			U	1.21	ug/kg	0.362	1.21	
100-41-4 Ethylbenzene U 1.21	108-90-7	Chlorobenzene	ប	1.21	ug/kg	0,362	1.21	
100-42-5 Styrene 1.92		Ethylbenzene	υ	1.21	ug/kg	0.362	1.21	
75-25-2 Bromoform U 1.21 UJ ug/kg 0.362 1.21 79-34-5 1,1,2,2-Tetrachloroethane U 1.21 ug/kg 0.362 1.21				1.92 J	ug/kg	0.362	1.21	
79-34-5 1,1,2,2-Tetrachloroethane U 1.21 ug/kg 0.362 1.21		•	U	1.21 UJ	ug/kg	0.362	1.21	
0.362 1.21		1,1,2,2-Tetrachloroethane	υ	1.21	ug/kg	0.362	1.21	
	1330-20-7	Xylenes (total)	U	1.21	ug/kg	0.362	1.21	

12/2/09

-		<u> </u>					Date: November	
		C	Volat				Page 1	of 1
				f Analysis ımmary				
	·	Sai	nbie or	ининат у				
SDG Number:	239856			•	Matrix	:	SOIL	
Lab Sample ID:		Client:		ECO1 002	Duntan		oc	
Client Sample: Client ID:	QC for batch 919051 MB for batch 919051	Method:		ECOL007 SW846 8260B	Project SOP R		GL-OA-E-038	
Batch ID:	919052	Inst:		VOA9.J	Dilutio		1	
Run Date:	11/04/2009 12:27	Analyst:		RXY1	Purge	Yol:	5 mL	
Prep Date:	11/04/2009 09:01	Aliquot:		5 g	Final V	olume:	5 mL	
Data File:	9j309B.d	Column:		RTX-Volatiles	Level:		LOW	
CAS No.	Раглиате	Qualifier	Result	Units	MDL/LOD	PQL/	LOQ	•
74-87-3	Chloromethane	υ	1.00	ug/kg	0.300	1.0	0	
75-01-4	Vinyl chloride	υ	1.00	ug/kg	0.300	1.00)	
74-83-9	Bromomethane	υ	1.00	ug/kg	0.300	1.0)	
75-00-3	Chloroethane	υ	1.00	ug∕kg	0.300	1.00)	
57-64-1	Acetone	υ	5.00	ug/kg	1.66	5.00)	
75-35-4	1,1-Dichloroethylene	ប	1.00	ug/kg	0.300	1,00)	
5-09-2	Methylene chloride	υ	5.00	ug/kg	2.00	5.00)	
5-15-0	Carbon disulfide	υ	5.00	ug/kg	1.25	5.00)	
634-04-4	tert-Butyl methyl ether	υ	1.00	ug/kg	0.300	1.00)	
56-60-5	trans-1,2-Dichloroethylene	υ	1.00	ug/kg	0.300	1.00)	
08-05-4	Vinyl acetate	υ	5.00	ug/kg	1.25	5.00)	
5-34-3	1,1-Dichloroethane	υ .	1.00	ug/kg	0.300	1.00)	
8-93-3	2-Butanone	U	5.00	ug/kg	1.50	5.00)	
56-59-2	cis-1,2-Dichloroethylene	ប	1.00	ug/kg	0.300	1.00)	
7-66-3	Chloroform	υ	1.00	ug/kg	0.300	1.00	•	
1-55-6	1,1,1-Trichloroethane	U	1.00	ug/kg	0.300	1.00	•	
6-23-5	Carbon tetrachloride	, υ	1.00	ug/kg	0.300	1.00	١	
07-06-2	1,2-Dichloroethane	U	1.00	ug/kg	0.300	3.00)	

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71-43-2

79-01-6

78-87-5

75-27-4

108-10-1

108-88-3

79-00-5

591-78-6

127-18-4

124-48-1

108-90-7

100-41-4

100-42-5

75-25-2

79-34-5

1330-20-7

10061-01-5

10061-02-6

Benzene

Toluene

2-Нехаполе

Chlorobenzene

Ethylbenzene

Bromoform

Xylenes (total)

Styrene

Trichloroethylene

1,2-Dichloropropane

Bromodichloromethane

4-Methyl-2-pentanone

1,1,2-Trichloroethane

Tetrachloroethylene

Dibromochloromethane

1,1,2,2-Tetrachloroethane

cis-1,3-Dichloropropylene

trans-1,3-Dichloropropylene

los ellahed prai Level 4 C-- Preservative Type (6) Note: extra sample is required for sample specific QC Comments for received (Fill in the number of containers for each test) Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 ¥ GEL Laboratories, LLC 2040 Savage Road Phone: (843) 556-8171 Charleston, SC 29407 Fax: (843) 766-1178 (SW/SW Sample Analysis Requested.[5] GEL Chain of Custody and Analytical Request 20071055/66 (pril, 2017) WSI08 Vd3 W₃ М M M M M Should this considered: ž Syllogothes. Field Sample 20 29 Sa. S S 8 S 3 B Δ Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards GEL Work Order Number: 23 of 3510 OC Code Send Results To: MS=ng@cnc.con Z Z Ĺ Z Z 2 (Subject to Surcharge) Fax Results: 2 Z Z 1207 Time Collected (Millery) 0310 0830 0400 5501 60/22/01 1030 Phone #: 1025 1037 7/01/09/27/01 110 Fax#: 10/22/01 10/23/09 Date Collected 10/27/01 10/23/09 10/22/01 60/22/01 10/23/01 10/23/09 (mm-dd-yy) ENVIRONMENT HAS * For composites - indicate start and stop date/time 053.01 RA 05 ₹ \$ Sample ID Client Name: Ecology TAT Requested: Norma SWE-5-1003 SUE-5-003 SME-5-004 849-S-002 SME-S-002 SME -5-006 SME -S-005 Project #: 002693 BAG-M-1015 B46-5-00 JOSME-5-001 Project/Site Name: COC Number (1); Collected by: GEL Ouote #: No Number: Address:

8015M	Bolsm for TOHI Diesel	PH/Die	esel & Mobroil		Eastern Pacific Central Other
		Chain of Custody Signatures	dy Signatures	Sample Shinning and Deliner, Detering	Mountain Delicery Deterio
Relinquished By (Signed)	Date	Time	Received by Crimed) Date	TWO CHILDREN CONT.	Denvery Details
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	10/22/01	755	1. K.11. X/0/ VMy 20/27/09 400	Method of Shipment:	inoed:
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7			2	Airbill #:	,
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Sample Collection Time Zone

OC Codert N = Normal Sample, TB = Trip Blank, FD = Field Duplicata, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Buppicate Sample, G = Grab, C = Composite

1.) Chain of Custody Number - Client Determined

3.) Field Filtered: For liquid matrices, indicate with a - Y - for yes the sample was field filtered or - N - for sample was not field filtered.

4.) Matrix Coden DW-Drinking Water, GW-Graundwaler, SW-Surface Water, WW-Water, W-Water, SO-Soil, SD-Sediment, SL-Sludge, SS-Soild Wate, O-Oil, P-Filter, P-Wije, U-Urine, F-Feed, N-Nasel 5.) Sample Analysis Requested: Analytical method requested (i.c. 8260B, 6010B/1470A) and number of containers provided for each (i.c. 8260B - 3, 601/182/470A - 1),

6.) Preservative Type: HA ** Hydrochloric Acid, NI = Nitric Acid, SK ** Sodium Hydroxide, SA ** Soliunic Acid, AA ** Ascorbic Acid, HX ** Hexare, ST ** Sodium Thiosulfale, If no preservative is added =* karve field blank

YELLOW = FILE WHITE = LABORATORY

· PINK = CLIENT

For Lab Receiving Use Only

Custody Seal Intact?
(PES) NO
Cooter Temp:

of 2402 7 Page

Page: 4 767.92 2053.0128.15	CET Cho	in of	7040	, and a	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	7					GEL	GEL Laboratories, LLC	LLC		
			ann or custous and exhaistical frequest	T) dill		lally	ובשו	rogi.	בנו		2040	2040 Savage Koad	d 7,03		
Φ.	GET, Work Order Number:	ii						-			Phone	Phone: (843) 556-8171	-8171	•	
PO Number:	The County of th		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,								Fax: (Fax: (843) 766-1178	178		
Client Name: ECOLOGY to ENVIRONMENT	T	Phone #:			٠	S	mple An	alysis I	tequest	d (3) (F	ill in the	number of	containe	Sample Analysis Requested (5) (Fill in the number of containers for each test)	
Project/Site Name:	ge,	Fax #:			Should this	<u> </u>		Con		1231				< Preservative Type (6)	(e)
Address:					sample be considered;		4D7.	1)	23as	<u>s</u>)					
Collected by ACT	Send Results To: ny Sony	Sho Cr	9				g ok	097 VS10		W/')			-	Comments Note: extra sample is	. <u>Ş</u>
Sample ID * For composites - indicate start and stop date/time	*Date Collected (mm-dd-yy)	*Time Collected (Military) (thums)	QC Code Fiel	Field Samplo	Radioactive	TSCA Regula Total mum			148F 39	OF A73	•			required for sample specific QC	ple
BAG-S-003	10/23/01	100	Z	50		· · ·	X	X	X	X					
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The state of the s								_	_	-	_				
TAT Requested-Normal; Specify:	(Subject to Surcharge) Fax Results:) Fax Res	ults: Y	Yes /	ટ્ર		Circle Deliverable: C of A / QC Summary	iverable	CofA	00 /	hummary	/ Level 1	/ Level 2	/ Level 3 /	Covel 4
Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards	o these samples?	lf so, plea	se list the)	iazards								Sample C Eastern Central Monnel	Santole Collect Eastern Central	Time Zone	N .
	ody Signatures								Sam	ole Shir	ning an	Sample Shipping and Delivery Details	Details	1	
Relinquished By (Signed) Date Time	Received by (signed)		Date Time	g .		GEL PM:	ند				,				
10/26/07 1730	On X	Ellen	(02)	2409	200	dethod of	900 Method of Shipment:				Date	Date Shipped:			
7	2		-	-	,	Airbill #:									
3 13 Grant 135 A City Co. 1 A	3					Airbill#:									
1. Clean of Consort Number – Clean Determines 1. Clean of Consort Number – Clean Determines 1. Consort N = Normal Sample, TB = Tried Duplicate, TB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Gmb, C = Composite 1.) Field Filtered: For diquid maritree, indicate with a · Y · For yea the sample was field filtered or · N · For sample was not field filtered. 1.) Matrix Codes: DW-Drinking Water, GW-Groundwater, SW-Surface Water, WW-Water, SO-Soli, SD-Solina, SL-Sludge, SS-Solid Waste, O=Cil, F-Filter, P=Wipe, U=Urine, P-Fecal, N=Nasal 5.) Sample Analysis Requested: Analysis and method requested (i.e. 22508, 601087470A, s) and number of containings provided for each (i.e. 32608 - 3, 601087470A - 1). 6.) Preservable Type: RQ - Address of the Added of the Addity N= Nither Add - AA - Accepted Add - RX - Accepted Add - AA - Accepted Add - RX - Accepted Add - AA - Accepted Add - RX - Accepted Add - AA - Accepted AA - Acce	B ~ Equipment Blank, Mass field filtered or ~ N ~ i cr, WW~Waste Water, V 0B7470A) and number o	IS = Matrix Sp for sample was y=Water, SO f containers pre	. MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite (of sample was not field filtered. , W = Water, SO = Soil, SD = Sodiment, SL = Sludge, SS = Soild Waste, O = Cil., F = Filter, P = Wipe, User of containers provided for each (fig. 23269 = 3, 6910B/740A - 1). (furle, Acid, AA = Astocole, Acid, HX = Heyeng ST = Sodium Tabusites or standard.)) Matrix Sp , SL-Sludg i.e. 8260B - 3	ike Duplica c, SS-Solic , 6010B774 ST = Sodi	te Sample, I Waste, O 70.4 - 1),	. C = Grub, . -Oil, F=Filt	C - Comp er, P=Wip	raic 1. DerDrine	Pefccal,	X=Nasa]		For	For Lab Receiving Use Only Custady Seal Intact? (EES) NO Cooler Temp:	yhty
WHITE=LABORATORY	RATORY		YELLOW = FILE	FILE	1000 I	um i niosu 	PINK = CLIENT	LIENT	is added	ltave field	blank			, c	

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, CA
TDD Number: TO2-09-09-09-0002	Project Number: 002693.2053.01RA
Laboratory: GEL Laboratories, LLC	Lab Project Number: 239856
Sampling Dates: 10/22/09 & 10/23/09	Sample Matrix: Soil
Analytical Mothod: TPH as Diesel by EPA 8015M	Data Reviewer: M. Song

REVIEW AND APPROVAL:

Data Reviewer:	Mindy Song	Date: 12/7/0/
Technical QA Reviewer: _	Howard Edwards 7///	Date: 12-08-05
Project Manager:	Dan Hang	Date: _12/9/07
	f } f	•

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory l.D.
1	SME-S-001	239856-001
2	SME-S-002	239866-002
3	SME-S-003	239868-003
4	SME-8-1003	239856-004
В	SME-S-005	239058-008
6	SME-S-006	239856-007
7	BAG-8-001	239856-008
8	BAG-S-002	239856-009
9	BAG-S-003	239866-010
10		
11 .		
12		
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Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, CA
TDD Number: TO2-09-09-0902	Project Number: 002693.2053.01RA

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklis	t Code:
	X Included: no problems
	* Included: problems noted in review
	O Not Included and/or Not Available
	NR Not Required
•	RS Provided As Re-submission
Case Na	rrative:
	X Case Narrative present
Quality C	Control Summary Package:
	X Data Summary sheets * Matrix Spike/Spike Duplicate Recoveries
	Matrix Spike/Spike Duplicate Recoveries
	X Laboratory Control Sample Recoveries
	X Method Blank Summaries
	X Initial Calibration Data
	X Continuing Calibration Data
	* Surrogate Compound Recovery Summary
	NR Internal Standard Area Summary
Sample a	and Blank Data Package Section
	X Chromatograms
	X Quantitation Reports
Raw QC	Data Package Section
,	X Quantitation Reports for Standards, LCS, and MS/MSD
,	X List of Instrument Detection Limits
	X Chain-of-Custody Records
	X Sample Preparation and Analysis Run Logs

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, CA
TDD Number: TO2-09-09-0002	Project Number: 002693.2053.01RA

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	Holding Times	YES
2	Instrument Performance Criteria	YES
3	Initial Calibrations	YES
4	Continuing Calibrations	YES
5	Laboratory Control Sample	YES
6	Matrix Spike/Matrix Spike Duplicate	YES
7	Blanks and Background Samples	YES
8	Surrogate Compounds	YES
9	Internal Standards	, N/A
10	Duplicate Analyses	YES
11	Analyte Identification	YES
12	Analyte Quantitation	YES
13	Overall Assessment of Data	YES
14	Usability of Data	YES

Comments: N/A: Not Applicable

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, CA
TDD Number: TO2-09-09-0902	Project Number: 002693.2053.01RA

1. HOLDING TIMES

X	Acceptable	
	Acceptable with qualification	
	Unacceptable	

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the nondetected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

Water Samples:

Purgeable analyses: 14 days (from collection) to analysis.

Extractable analyses: 7 days (from collection) to extraction; 40 days (from extraction) to analysis.

Soil or Other Matrices:

Purgeable analyses: 14 days (from collection) to analysis.

Extractable analyses:14 days (from collection) to extraction;40 days (from extraction) to

analysis.

Comments: Analytical holding time was met.

2. INSTRUMENT PERFORMANCE CRITERIA

x	Raw data has been checked to verify that there is adequate resolution (>25%) between peaks of the standard compounds.
Х	Raw data has been checked to verify that retention time windows are reported and that all standard compounds are within the windows.

Comments:

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, CA
TDD Number: TO2-09-09-0902	Project Number: 002693.2053.01RA

	3. INITIAL CALIBRATIONS
	Acceptable Acceptable with qualification Unacceptable
Respons within co associate	agged below, a 5-point initial calibration was run. In addition, average Relative e Factor (RRF), and percent relative Standard Deviation (%RSD) values were introl limits (%RSD <= 20). For analytes which exceeded these control limits, and detected results are qualified as estimated (J). In cases where the low on level was not detected, the non-detected results are qualified (UJ).
Commen	ts: TPH as diesel standards were used and %RSD values were within the control limit
	4. CONTINUING CALIBRATIONS
	Acceptable Acceptable with qualification Unacceptable

Unless flagged below, continuing calibrations were performed at the beginning and at the end of any group of samples and at least every 12 hours. In addition, Relative Response Factors (RRF), and Percent Difference (%D) values were within control limits (%D <= 15). For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the %D is very high and indicates a severe loss of instrument sensitivity, the associated non-detected results may be qualified as estimated (UJ) or rejected (R) based on the professional judgment of the reviewer.

Comments: Diesel standards were analyzed and percent difference values were within the control limit.

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, CA
TDD Number: TO2-09-09-0002	Project Number: 002693.2053.01RA

5. LABORATORY CONTROL SAMPLE

<u>X</u>	_Acceptable
	_Acceptable with qualification
	Unacceptable
	_No Laboratory Control Samples Analyzed
Laborat	ory control sample recoveries are used for a qualitative indication

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

Comments: LCS recovery was within the control limit.

6. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Х	Acceptable
	Acceptable with qualification
	Unacceptable
	No Matrix Spike/Matrix Spike Duplicates Analyzed

Matrix spike and matrix spike duplicate recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. The RPD between the recoveries is used for a qualitative indication of precision. Spike recovery limits of 80% to 120% are specified in EPA/540/G-90/004. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). At the discretion of the reviewer, other limits may be used only if justification can be provided.

Comments: Sample SME-S-002 was designated for MS/MSD analysis and the recoveries were outside of control limits. Qualification was not required since the amount of diesel present in the parent sample was greater than 4X the amount spiked.

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, CA
TDD Number: TO2-09-09-0902	Project Number: 002693.2053.01RA

7. BLANKS AND BACKGROUND SAMPLES

X	Acceptable
	Detection Limits Adjusted
The fo	llowing blanks were analyzed:
Х	Method (preparation) Blanks
	Field Blanks
	Instrument Blanks
	Rinsate Blanks
	Background Samples
	VOA Trip Blanks

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: No contamination was found in the method blank at reporting limit level.

8. SURROGATE COMPOUNDS

X	Acceptable
	Acceptable with qualification
	Unacceptable
	No surrogates analyzed

Surrogate compound recoveries for samples analyzed within a sample group must be within the limits specified in the method. If the surrogate recovery is between 10% and the lower limit, the associated detected results are qualified as estimated (J) and the non-detected results are qualified as estimated (UJ). If the surrogate recovery is <10%, the associated detected results are qualified as estimated (J) and the non-detected results are rejected (R). If the surrogate recovery is above the upper limit, the associated detected results are qualified as estimated (J). Surrogate recoveries which exceeded these limits are noted below and the associated results are qualified on the attached sample report forms. If there are no limits specified in the method, laboratory limits based on historical performance may be used at the discretion of the reviewer.

Comments: All surrogate recoveries except SME-S-003 and SME-S-1003 were within the control limits. Qualification was not necessary since the surrogates were diluted out due to dilution.

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, CA		
TDD Number: TO2-09-09-0902	Project Number: 002693.2053.01RA		
9. INTERNAL STANDARDS AcceptableAcceptable with qualificationUnacceptableXNo internal standards analyzed			
Internal Standard area counts for samples analyzed within a sample group must be within the range of 50% to 200% of the internal standard area for the continuing calibration. If the internal standard area is between 10% and 50% of this value, the associated detected results are qualified as estimated (J) and the nondetected results are qualified as estimated (UJ). If the internal standard area is <10% of the calibration area, both the detected and nondetected results are rejected (R). If the internal standard area is >200% of the calibration area, the associated detected results are qualified as estimated (J). Internal standards which exceeded these limits are noted below and the associated results are qualified on the attached sample report forms.			
Comments:			
10. DUPLICATE A	NALYSES		
X Acceptable Acceptable with qualification Unacceptable No Duplicates Analyzed			
Type of duplicates analyzed: X Field Duplicates Laboratory Duplicates			
Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the results as estimated (J) for any analyte whose RPD exceeds that specified in the Sampling and Analysis Plan.			
RPD = <u>2(Value 1 - Value 2)</u> x 100% Value 1 + Value 2			
Comments: SME-S-003 SME-S-10 TPH as Diesel, mg/kg 12500 11500			

Sample SME-S-1003 was a field duplicate of SME-S-003 and RPD was less than 35%.

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, CA
TDD Number: TO2-09-09-09-0002	Project Number: 002693.2053.01RA

11. ANALYTE IDENTIFICATION

Verify that positive results have been confirmed on a dissimilar second column, that the sample chromatograms agree with the correct daily standard chromatograms, and that the retention time windows match.

Comments: Samples SME-S-002, SME-S-003, SME-S-005, BAG-S-002, & BAG-S-003 contained atypical diesel pattern and hydrocarbons heavier than diesel.

12. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

Purgeable analyses, water samples:

ug/L = (analyte area)(amount of external standard, ng)

(external standard area)(volume of water purged, mL)

Purgeable analyses, soil samples:

ug/kg = (analyte area)(amount of external standard, ng)

(external standard area)(weight of soil extracted, g)(fraction solids)

Extractable analyses, water samples:

ug/L = (analyte area)(amount of external standard, ng)(total volume of extract, uL)

(external standard area)(volume of sample extracted, mL)(injection volume, uL)

Extractable analyses, soil samples:

ug/kg = (analyte area)(amount of external standard, ng)(total volume of extract, uL)

(external standard area)(weight of sample extracted, g)(fraction solids)(injection volume, uL)

Comments: Analyte quantitation was acceptable.

SME-S-002

Diesel: (9580762/14703) = 651.6195 mg/kg.

(651.6195 mg/kg) (10) (1/30.06) (100/83.5) = 259.6 mg/kg. Lab reported 260 mg/kg.

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, CA
TDD Number: TO2-09-09-09-0002	Project Number: 002693.2053.01RA

13. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to	the
overall data usability for the specified level.	

X	_Acceptable
	Acceptable with Qualification
	Rejected
Accept	ed data meet the minimum requirements for the following EPA data category:
	_ERS Screening
	Non-definitive with 10 % Conformation by Definitive Methodology
	Definitive, Comprehensive Statistical Error Determination was performed.
X	Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments: Data as reported are valid.

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Oxnard, CA
TDD Number: TO2-09-09-09-0002	Project Number: 002693.2053.01RA

14. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the <u>EPA</u>
<u>EMERGENCY RESPONSE SECTION AND SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM</u>
<u>QUALITY ASSURANCE SAMPLING PLAN FOR SOIL, WATER AND MISCELLANEOUS MATRIX SAMPLING, HALACO BUILDING ASSESSMENT, OXNARD, VENTURA COUNTY, CALIFORNIA, OCTOBER 16, 2009</u>
(QASP).

The following data use objective was indicated in the QASP:

TO ASSIST IN DETERMINING THE PRESENCE OR ABSENCE OF A HAZARDOUS MATERIAL OR SUBSTANCE AT LEVELS ABOVE AN AVAILABLE DETECTION OR QUANTIFICATION LEVEL.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVE.

B. These data meet quality objectives stated in the QASP.

AS INDICATED IN SECTION 2.4 OF THE QASP, THE INVESTIGATION WILL GENERATE BOTH SCREENING AND DEFINITIVE DATA AND TABLE E OF THE QASP OUTLINES THE DATA QUALITY INDICATOR GOALS APPLICABLE TO THE DEFINITIVE DATA QUALITY LEVEL. THE DATA IN THIS PACKAGE MEET THESE REQUIREMENTS.

15. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problem requiring corrective action was found.

Resolution: Not required.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.

Diesel Range Organics

DRO

GEL LUUUI	atories LLC			Repor	l Date: November 12, 2009
		Flame Ioniza Certificate Sample S	of Analysis		Page 1 of 1
SDG Number:	239856	Date Collected:	10/22/2009 08:10	Matrix:	SOIL
Lab Sample ID:	239856001	Date Received:	10/27/2009 09:00	%Moisture:	28.3
	•	Client;	ECOL007	Project;	ECOL00209
Client ID:	SME-\$-001	Method:	SW846 8015A/B SYOC	SOP Ref:	GL-OA-E-003
Baich ID;	918539	Inst:	FID7,1	Dilution:	1
Ron Date:	11/05/2009 13:14	Analyst:	KXR2	Inj. Vol:	1 vL
Prep Date:	11/03/2009 19:48	Aliquete	30.12 g	Final Volume;	1 mL
Data File;	039f3901.d	Column;	DB-SMS	Level:	LOW
CAS No.	Parmname	Qualifier Resul	t Units M	DL/LOD PQL	лоо

6.17

mg/kg

3.01

9.27

BJ

12/7/09

ODD 12.00.	THOMES LEC					Report	t Date: November	12, 2009
·				ion Detector			Page 1	of 1
		Certifi	cate o	of Analysis				
		Sam	ple Si	ımmary				
SDG Number:	239856	Date Collec	ted:	10/23/2009 10;30	j	Matrix:	SOIL	
Lոն Sample ID։	239856002	Date Receiv	ved:	10/27/2009 09:00		%Molstyre:	16.5	
		Client:		ECOL007	:	Project:	ECQL00209	
Client ID:	SME-S-002	Method:		SW846 8015A/B SV	oc :	SOP Ref:	GL-OA-E-003	
Batch ID:	918539	Inst		FID7.I	1	Dilution:	10	
Run Date:	11/05/2009 18:09	Analyst:		KXR2]	Inj. Vol;	1 uL	
Prep Date:	11/03/2009 19:48	Aliquot:		30.06 g]	Final Volume:	1 mL	
Data File:	047f4701.đ	Column:		DB-5MS		Level:	LOW	
CAS No.	Parmneme	Qualifier	Result	Units	MDL/I	OD PQL	лоо	
ORO	Diesel Ronge Organics	В	260	mg/kg	25.9	79.	.7	

12/91-9

							uchatt pater moremper raj acos			
				ion Detector of Analysis				Page 1 of 1		
				ımmary						
SDG Number:	239856	Date Colle	ected:	10/23/2009 10:35		Matrix	:	SOIL		
Lab Sample ID:	239856003	Date Rece	ived:	10/27/2009 09:00		%Mois	ture:	16.9		
		Client:		ECOL007		Project	:	ECOL00209		
Client ID:	SME-S-003	Method:		SW846 8015A/B S	SVOC	SOP Re	ef:	GL-OA-E-003		
Batch ID:	918539	Inst:		FID7.I		Dilution	n!	500		
Run Date:	11/05/2009 20:01	Analyst:		KXR2		Inj. Vol	l:	1 uL		
Prep Date:	11/03/2009 19:48	Aliquot:		30.02 g		Final V	olume:	1 mL		
Data File:	050f5001.à	Column:		DB-5MS		Level:		LOW		
CAS No.	Parmname	Qualifier	Result	Units	MD	L/LOD	PQL	LOQ		
DRO	Diesel Range Organics	В	12500	me/ke	1:	300	401	0		

12/7/09

Report Date:	November	12,	2009
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				Acport Date: Horomber 12, 20				
			tion Detector		Page 1 of 1			
			of Analysis					
		Sample	Summary					
SDG Number:	239856	Date Collected;	10/23/2009 10:37	Matrix:	SOIL			
Lab Sample ID:	239856004	Date Received:	10/27/2009 09:00	%Moisture;	17,1			
		Client:	ECOL007	Project:	ECOL00209			
Client ID:	SME-S-1003	Method:	SW846 8015A/B SVOC	SOP Ref:	GL-OA-E-003			
Batch ID:	918539	Inst:	FID7.I	Dilution:	500			
Run Date:	11/06/2009 10:11	Analystı	JMB3	Inj. Vol:	1 uL			
Prep Date:	11/03/2009 19:48	Aliquot:	30.04 g	Final Volume:	1 mL			
Data File:	005f0501.đ	Column:	DB-5MS	Level:	LOW			
CAS No.	Parmname	Qualifier Res	dt Units MD	L/LOD PQL	/LOQ			
DRO	Diesel Range Organics	B 1150) mg/kg 1	310 40	20			

12/3/08

GEL Laboratories LI	\mathcal{L}	7
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							Kehort 1	vare: Movember 12, 20	N)
	······································	Flame Io	onizat	ion Detector				Page 1 of 1	
		Certif	icate o	of Analysis					
		Sam	iple Si	иттагу					
SDG Number:	239856	Date Colle	cted:	10/23/2009 10:42		Matrix:		SOIL	
Lab Sample ID:	239856006	Date Recei	ived:	10/27/2009 09:00		%Moistr	ure: 1	18.6	
		Client:		ECOL007		Project:	,	ECOL00209	
Cliept ID:	SME-S-005	Method:		SW846 8015A/B SV	OC.	SOP Ref	f:	GL-OA-E-003	
Batch ID:	918539	Inst:		FID7.1		Dilution	:	5	
Run Date:	11/06/2009 10:48	Analyst:		JMB3		Inj. Vol:	:	1 oL	
Prep Date:	11/03/2009 19:48	Aliquot:		30.18 g		Final Vo	olume:	1 mL	
Data File:	006f0601.d	Column:		DB-5MS		Level:		LOW	
CAS No.	Parmname	Qualifier	Result	Units	MDI	ДОĐ	PQLA	,oQ	
DRO	Diesel Range Organics	В	205	mg/kg	13	3.2	40.7		

12/2/09

GEL LABOR	atories LLC						Report	Date: November	12, 2009
			ization D ate of Ana le Summa	dysis				Page 1	of 1
SDG Number;	239856	Date Collecte	ed: 10/23	2009 11:10		Matrix	:	SOIL	
Lab Sample ID:	239856007	Date Receive	d: 10/27	2009 09:00		%Mols	iure:	21	
		Client:	ECO	.007		Project	i:	ECOL00209	
Client ID:	SME-S-006	Method:	SW84	6 8015A/B	svoc	SOP R	ef:	GL-OA-E-003	
Batch ID:	918539	Inst:	FID7.	ĭ		Dilutio	n:	1	
Run Date:	11/06/2009 11:25	Analyst:	ЈМВ 3			Inj. Vo	3:	1 vL	
Prep Date:	11/03/2009 19:48	Aliquot:	30.09	g		Final V	olume:	1 mL	
Dato File:	007f0701.d	Column:	DB-5	MS		Leyel:		LOW	
CAS No.	Parmname	Qualifier R	tesult	Units	MDI	'TOD	PQL/	roó	
DRO	Diesel Range Organics	B 1	0.2	mg/kg	2.	73	8,4]	

12/2103

Report Date:	November 12, 20	09
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					Keboi	t Date: November 12, 2009
	,	Flame Ion	ization Detector			Page 1 of 1
		Certific	ate of Analysis			
		Samp	le Summary			
SDG Number:	239856	Date Collecte	ed: 10/23/2009 07:00	1	Matrix:	SOIL
Lub Sample ID:	239856008	Date Receive	d: 10/27/2009 09:00	i	%Moisture:	25,9
		Client;	ECOL007		Projeci:	ECOL00209
Client ID;	BAGS-001	Method:	SW846 8015A/B	SYOC	SOP Ref:	GL-OA-E-003
Batch ID:	918539	Inst:	F1007.1		Dilution:	1
Run Date;	11/05/2009 23:42	Analyst:	KXR2		Inj. Vol:	1 uL
Prep Date:	11/03/2009 19:48	Aliquot:	30.11 g		Final Volume:	1 mL
Data File:	056f5601.d	Column:	DB-5MS		Leyel:	row
CAS No.	Parmname	Qualifier F	tesult Units	MDI	LOD PQ1	<i>I</i> LOQ
DRO	Diesel Range Organics	В 3	6.7 mg/kg	2,	91 8.	96

12/3/09

GEL	Laboratories	LLC
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GEL Labor	atories LLC						Report Date: Nov	ember 12, 2009
		Certifi	cate o	ion Detector of Analysis ummary			Page	1 of 1
SDG Number:	239856	Date Collec	cted:	10/23/2009 10:55		Matrix	: SOIL	
Lab Sample ID;	239856009	Date Recei	ved:	10/27/2009 09:00		%Mois	ture: 16.9	
		Client:		ECOL007		Project	: ECOL0020	19
Client ID:	BAG-S-002	Method:		SW846 8015A/B S	VOC	SOP R	ef: GL-OA-E	~ 003
Baich ID:	918539	Inst		FID7.I		Dilatio	n: 10	
Rụn Date:	11/06/2009 12:02	Analyst:		JMB3		Inj. Vo); 1 yL	
Prep Date:	11/03/2009 19:48	Aliguot:		30.08 g		Final V	olume: 1 mL	
Data File;	00800801.d	Column:		DB-5MS		Level:	LOW	
CAS No.	Parmname	Qualifier	Result	Units	MDI	/LOD	PQL/LQQ	
DRO	Diesel Range Organics	В	450	mg/kg	2(5.0	80.0	

GEL	Laho	rator	ios	IJC

GEL Labor	atories LLC						Report Date: November 12, 200
		Certi	ficate o	ion Detector of Analysis ummary			Page 1 of 1
SDG Number:	239856	Date Coll	lected:	10/23/2009 11:00		Matrix:	son
Lab Sample ID:	239856010	Date Rec	cived:	10/27/2009 09:00		%Moist	ure: 13,9
•		Client;		ECOL007		Project:	ECOL00209
Client ID:	BAG-S-003	Method;		SW846 8015A/B S	VOC	SOP Re	r: GL-OA-E-003
Batch ID:	918539	Inst:		FID7,I		Dilution	: 1
Run Date:	11/06/2009 12:39	Analyst:		JMB3		Inj. Vol:	1 uL
Prep Date:	11/03/2009 19:48	Aliquot:		30.06 g		Final Vo	olume: 1 mL
Data File:	009M901.d	Column:		DB-5MS		Level:	rom
CAS No.	Рагтивате	Qualifier	Result	Units	MDL	/LOD	PQL/LOQ
DRO	Diesel Range Organics	В	120	mg/kg	2.5	i1	7.73

12/2109

OBL LADO	mones CCC					Report	Date: November 12, 2009
		Certii	ficate d	ion Detector of Analysis ummary			Page 1 of 1
SDG Number:	239856				Matri	g.	SOIL
Lab Sample ID:							
Client Sample:	QC for batch 918537	Client;		ECQL007	Projec	t;	QC
Clieni ID;	MB for batch 918537	Method:		SW846 8015A/B SVQ	C SQPE	cf:	GL-OA-E-003
Batch ID;	918539	Inst:		FID7.I	Dllutjo	n;	1
Run Dater	11/05/2009 12:01	Analyst:		KXR2	Inj. Vo	ol:	1 uL
Prep Date:	11/03/2009 19:48	Aliquet:		30 g	Final '	/olume:	1 mL
Data File:	037f3701.d	Column;		DB-5MS	Level:		LOW
CAS No.	Рагипате .	Qualifier	Result	Units	MDL/LOD	PQL	/LOQ
DRO	Diesel Range Organics	j	2.56	me/ke	2.17	6.6	37

12/2/0)

(4/2 /[11]) 3985501FOLE

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Project #: 002693. 2053.0104 05	1. 1	GEL Chain of Custody and Analytical Request	in of	Cust	dy an	d An	, aly	tical]	Reg	uest		GEL Laboratories, 2040 Savage Road	GEL Laboratories, LLC 2040 Savage Road	70	
GEL Quote #:					1		•			• •		Charleston	Charleston, SC 29407		
PO Number:	GEL Wor	GEL Work Order Number:		234856	5						· ·	Phone: (84 Fay: (843)	Phone: (843) 556-8171 Fav: (843) 766-1178	1	
Client Name: 圧coにっタン	AND ENVIRONMENTER		,Phone #;				ΙÖ	Sample Analysis Requested	alysis F	equeste	1	n the num	nber of con	(Fill in the number of containers for each test)	
Project/Site Name:	•	1	Fax #:			Should this	<u> </u>	(1)	b u	Ţ,				< Preservative Tyne (6)	6
Address:						considered:		(6)		2945	<u>ک</u> رد)				
Collected by: \	Send Resul	Send Results To: MS+ng	العا	507				8010	NSI C					Comments Note: extra sample is	
Sample ID	le ID	*Date Collected	Time Collected (Milltory)	QC Code	Field Sample	Z o L	elugəA A:				06 40 5W/51		-	required for sample specific QC	able .
ror composites - maicate start and stop date/time	start and stop date time	((()	(пфит)		+	_		-K	-		٧ آجا	-			
244-M-1015		10/22/01	to2)	r.	Δ			X						* / Ge Make	į
DSME-5-001		60/22/01	0810	z	So	_	1	2 X	$\frac{\times}{}$					Lan merestale	
SME-5-002		10/23/09	1030	2	S		3	\hat{X}	$\stackrel{\sim}{\times}$	X	X	<u> </u>		1	
SUE-5-003		10/23/01	1035	>	So		3	X	$\stackrel{\sim}{\sim}$	X	X			1. 1- 20d	ار
SME-S-1003		10/23/09	1037	£	S		M	X	X	X	X			- / AVITA	T
1 SME-5-004		10/22/01	0830	2	ςs			X							
.) Sue -5-005		(0/23/0)	1042	z	S		M	Ź	X	X	X	-			1
SMÉ -5-006		10/13/09	1110	2	50		<u> </u>	DE NOTE OF THE PROPERTY OF THE		X	X				
Btg-S-001		10/23/01	6700	Z	22		-	×	X	X	X	 			T
849-5-002		10/22/01	SSOI	つ ユ	S		,,	×	冷	X	X				
TAT Requested: NormaD	Rush: Specify:	(Subject to Surchan	re) Fax Re	sults:	Yes /	Š		Circle Deli	verable:	CofA	Circle Deliverable: C of A / OC Summary	1 ~	evel 1 /	Level 1 / Level 2 / Level 3 / 7	
Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards SP (SM Fr TPH) Diesel & Mobroll	Are there any known hazards applicable to these samples? If so, please is $85(5M)$ for $77H$ D_i excl. & Modor of	these samples? SeL DV	if so, plea	ase list the	s hazards					·		· [Sample Col Eastern Central	1	
,	Chain of Custo	dy Signatures								0	I. China	2	Mountain	III	
Relinquished By (Signed)	Date Time	Time Received by (signed)		Date	Time		GEL PM:	Æ:			orn pre Sulphing and Delivery Details	on mar Si	livery De	TAILS	
100 A	1330	KM Wal	Jan	2202	og 900		fethod o	Method of Shipment:				Date Shipped:	Sch.		
		2	2	-			Airbill #:								
3		13				Ì	Airbill #:								
1.) Coain of Casooy Number = Clear Determined 2.) QC Coder: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite	-Trip Blank, FD - Field Duplicate, EX	B " Equipment Blank, N	AS Matrix Sy	ike Sample, N	ISD = Matrix S	pike Duplica	te Sample	G = Grab, C	 Compo 	jį.				For Lab Receiving Use Only	yardy
3.) Field Filtored: For Iquid matrices, indicate with a - Y - for yet the sample was field filtered. 4.) Merky Codes: DWE-Publishe Wisser, CWE-Considerates, SWE-Considerates, Wisser, William Codes, William CWE-Considerates, SWE-Considerates, William CWE-Considerates, WILLIAM CWE-CONSIDERATE	 Fried Filtered. For Ilquid matrices, indicate with a - Y - for yes the sample was field filtered or - 'A North Color NUMB Publishing Material COM Community Color Number 1987. 	vas field filtered or - N -	for sample was	e was not field filter	1 1 1	:		1						Custody Seal Intact?	Ī

For Lab Receiving Use Only Custody Seal Intact?

> 4.) Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Water, Water, SO=Soil, SD=Sediment, SL=Sludgs, SS=Soild Water, O=Oil, F=Filter, P=Wipe, U=Urine, F=Feed, N=Nasa 5.) Sample Analysis Requested: Analytical method requested (i.e. \$2608, 6010B/7470A) and number of containers provided for each (i.e. \$2608 · 3, 6010B/7470A · 1).
> 6.) Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexare, ST = Sodium Thiosulfate, If no preservative is added =)eave field blank
> WHITE = LABORATORY
> XELLOW = FILE

7 Page

of 2402

Page: 4 of 4 Project #: 062693, 2053.01/29.05	GEL Chain of Custody and Analytical Request	in of	Cust	ody a	nd A	nalv	Tical	Reg	Hest		GEL 2040	GEL Laboratories, LLC 2040 Savage Road	ries, LLC		
GEL Quote #:				•						_	G	Charleston, SC 29407	29407		
COC Number (1);	GEL Work Order Number:	er:							•		Phon	Phone: (843) 556-8171	56-8171		
Client Name: ECOLOGY 4-0 ENVIRONMENT, INC.		Phone #:		1	<u> </u>	"	Sample Analysis Requested (3)	nalysis I	Request		Fill in th	number	of contai	(Fill in the number of containers for each test)	
		Fax #:			Should this		ST300	on to	(/23 1.	-			< Preservative Type (6)	[ype (6)
Address:					sample be considered	·	4p7 -	/) r	23ds	s) 1	-		-		
Collected by: Co	Send Results To: InS-In-	50 C/c	8			_	10 200	V510) 00	N/'X				Comments Note: extra sample is	ts mple is
Sample ID * For composites - Indicate start and stop date/line	"Date Collected (mm-dd-yy)	Time Collected (Military)	QC Code	Field Su Filtered ⁽³⁾ Mat	Sample Matrix 19 adioactive	SCA Regula	lmun leto	8 4d	754}	06 pst=				required for sample specific QC	ample iC
B49-5-003	10/23/01	100	Z	14	χ δο 8				X	7	-				
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TAT Requested-Mormal? Rush: Specify:	(Subject to Surchar	ge) Fax Re	suíts:	Yes	% /		Circle Deliverable: C of A	liverable	CofA	~	OC Summary	/ / Level 1		Tevel 7 Tevel 3	
Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards	to these samples:	fso, ple	ase list t	he hazarı						·l				ection Time Zone	
													Central Mountain	aguile de la company de la com	
	Chain of Custody Signatures								San	iple Shi	pping a	nd Deliv	Sample Shipping and Delivery Details	S	
Relinquished By (Signed) Date Time	Received by (sig	gned) D	Date	Time		GEL PM:	Ä:								
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3 1. Chair and Computation Inches Channelland	3					Airbiil #:									
1) QCC Codes: N = Normal Sample, TB = Trip Blank, FB = Field Duplicate, EB = Equipment Blank,		MS = Matrix Splike Sample, MSD = Matrix Splike Duplicate Sample, G = Grab, C = Composite	sike Sample,	MSD - Mate	k Spike Dupl	icate Samp	ic, C = Grab,	C~ Comp	ostte					For Lab Receiving Use Only	e Only
J. Fred Fineden: For tights measured, inches with a * T * 100 Yet the sample was need there of * N - 100 sample was not lead inleaded. 4.) And fined to Cheer a way of the was need there of * N - 100 sample was not lead inleaded. 5.) Complete the was not	e was lieud lindred or N later, WW-Waste Water,	W-Water, SO	Soll, SD-Se	lered. Miment, SLA:	Studge, SS-Sc	id Waste,	O=OII, F=FI	tor, P=Wip	e, V¤Urin	o, P=Fecul,	, N=Nasal			Custody Seal Intact? (YES) NO	<i>6</i> 4 C
2.) sumpie Annysis scapesce: Annytoni memos requesce (p.c. 82608, do) 1087470A) and number 6.) Preservalve Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sul	108/14/0A) and number ium Hydroxide, SA = Suli	· of containers provided for each (i.e., <i>6260B</i> - 3, <i>6910B7470A</i> - 1). furle Acid, AA – Ascorbic Acid, HX – Hexane, ST – Sodium Thlosulfac, if no preservative is added – Itave ffeld blank	ovided for e - Ascorbic A	uch (i.e. <i>826t</i> cid, HX – He	18 - 3, 60/08, :xane, ST - Sc	<i>7470A -</i> 1 idium Thlo), sulfate, If no ₁	preservativ	e is added	- Itave fiel	d blank			Caoler Temp:	
WHITE = LABORATORY		-	YELLON	YELLOW = FILE			PINK = CLIENT	LIENT)	

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Halaco Engineering Company
Project TDD Number: T02-09-09-09-0002	PAN: 002693.2053.01RA

Laboratory: GEL Laboratories	Lab Project Number: 239856
Sampling Dates: October 23, 2009	Sample Matrix: Soll
Analytical Method: Gamma Spectroscopy (EML HASL 300 4.5.2.3), Alpha Spectroscopy – Th-228, Th-230, Th-232 (EML HASL 300, Th-01- RC Modified)	Data Reviewer: Joanna Z. Christopher

REVIEW AND APPROVAL:

Data Reviewer:

Technical QA Reviewer:

Project Manager:

Date: 12/10/09 Date: 12/10/09

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
. 1	BAG-S-001	239856008
2	· BAG-S-002	239856009
. 3	BAG-S-003	239856010
4	SME-S-002	239856002
5	SME-S-003	239856003
6	SME-S-005	239856006
7	SME-S-006	239856007
8	SME-S-1003	239856004

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

Χ	Included: no problems
*	Included: problems noted in review
. 0	Not included and/or Not Available
NR	Not Required
20	Provided As Resultmission

ANALYTICAL DATA REVIEW SUMMARY Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Halaco Engineering Company
.Project TDD Number: 702-09-09-09-0002	PAN; 002693.2053.01RA

Case Na	rrative:
X	Case Narrative present
Quality Control S	ummary Package:
Х	Data Summary sheets
X	Initial and Continuing Calibration results
X	Detector Background Control Charts
<u> </u>	Matrix Spike recoveries
X	Matrix Duplicate results
X	Field Duplicate results
X	Laboratory Control Sample recoveries
X	Analysis Detection Limits
X	Preparation Log
X	Analysis Run Log
Raw QC Data Pac	▼
X	Chain-of-Custody Records
X	Instrument Printouts
X	Sample Preparation Notebook Pages
X	Logbook and Worksheet Pages
X	Percent Solids Determination

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Halaco Engineering Company	
Project TDD Number: T02-09-09-09-0002	PAN: 002693,2053,01RA	

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	Holding Times	Yes
2	Initial and Continuing Calibrations	Yes
3	Laboratory Control Sample	Yes
4	Matrix Spike	Yes for Alpha Spec Thorium; Not Required for gamma spec of soils
5	Blanks and Background Samples	Yes
6	Duplicate Analyses	Yes (Matrix and Field Duplicates)
7	Analyte Quantitation	Yes
8	Overall Assessment of Data	Yes
9	Usability of Data	Yes

Comments:

A field duplicate sample was collected for sample SME-S-003 (SME-S-1003). Precision for the field duplicate sample pair was satisfactory. Precision was evaluated by RPD (relative percent difference) and NAD (normalized absolute difference).

Four gamma spec results were qualified with UJ (actinium-228 and radium-228 for sample SME-S-003, bismuth-214 for sample BAG-S-002, and lead-214 for sample SME-S-1003 – the field duplicate) for low abundance (peak area ratios were incorrect when compared with the known relative abundances). The UJ qualifier indicates that the detection limit may be estimated or uncertain. The thorium-230 result for sample BAG-S-001 was more negative than three sigma total propagated uncertainty and less negative than three sigma counting uncertainty. The laboratory re-counted the sample three times and did not find any reportable Th-230. The result was reported and qualified with a UJ. The detection limits were below the reporting limits.

Laboratory QC sample results were acceptable (laboratory replicates, method blanks, matrix spikes for alpha spectroscopy, and laboratory control standards). Tracer recoveries for alpha spectroscopy were acceptable. Laboratory annual calibrations and daily checks were acceptable.

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Halaco Engineering Company		
Project TDD Number: T02-09-09-09-0002	PAN: 002693.2053.01RA		

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X	Acceptable _ Acceptable with qu _ Unacceptable	ualification				•
	es were analyzed wit to sample preservati		lding times.	No probler	ns were idei	ntified with
	nple Matrices: hemistry analyses: 6 r	months from colle	ection to anal	lysis.		6

Comments:

For this gamma spectroscopic analysis there was no time period for ingrowth (for radon gas to decay to bismuth for analysis) because radium-226 was not a requested analyte. The samples were analyzed 10 to 12 days after collection.

2. INITIAL AND CONTINUING CALIBRATION VERIFICATION

X	Acceptable
	Acceptable with qualification
	Unacceptable

Unless flagged below, an initial calibration verification (ICV), background, and efficiency check were performed for each gamma detector at the beginning of the run, and were within the laboratory acceptance limits.

Comments:

The laboratory included these data for the alpha and gamma detectors for the dates of analysis and the results were acceptable.

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Halaco Engineering Company			
Project TDD Number: 702-09-09-0902 PAN: 002693.2053.01RA				
3. LABORATORY	CONTROL SAMPLE			
X Acceptable Acceptable with qualification Unacceptable No Laboratory Control Samples Ar	nalvzed			
No Laboratory Control Samples Ar	nalyzed sed for a qualitative indication of accuracy			

Comments:

Mixed gamma LCSs containing americium-241, cesium-137, and cobalt-60 were analyzed every 20 samples with acceptable recoveries within 75% to 125%. An alpha spectroscopy LCS containing thorium-230 was analyzed every 20 samples with acceptable recovery within 70% to 130%.

exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated non-detected results are

rejected (R) and detected results are qualified as estimated (J).

4. MATRIX SPIKE AND TRACER (ALPHA SPEC ONLY)

X	Acceptable
	Acceptable with qualification
	Unacceptable
	No Matrix Spikes Analyzed

Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. Unless flagged below, one matrix spike sample was analyzed at a rate of one per batch or one per 20 samples. Recoveries were within a range of 75-125%. Tracer recoveries are used for a quantitative indication of accuracy due to matrix effects in alpha isotopic analysis. Each sample was traced with a known quantity of thorium-229. Recoveries were within a range of 74% to 80% (the laboratory's acceptance range is 15% to 125%).

Comments:

Matrix spikes are not required and are not routinely performed for gamma spectroscopy analysis of soil samples using petri dish geometry. An alpha spectroscopy matrix spike containing thorium-230 was analyzed with acceptable recovery within 75% to 125% for sample SME-S-002.

Alpha spec samples were traced with thorium-229 with acceptable recoveries (74% to 80%).

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Halaco Engineering Company
Project TDD Number: <i>T02-09-09-09-0002</i>	PAN: 002693.2053.01RA

5. BLANKS AND BACKGROUND SAMPLES

X	_Acceptable
,	Detection Limits Adjusted
The fol	lowing blanks were analyzed:
X	Method (preparation) Blanks
	Field Blanks
X	Calibration Blanks (instrument background check)
	Rinsate Blanks
	Background Samples
A prepa	ation (method) blanks were prepared for each batch of samples that was analyzed. aration blank was analyzed after every continuing calibration standard, prior to analysis unless noted below. Any compound detected in the sample and also

detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments:

The method blank was analyzed for by gamma spectroscopy for the entire list of analytes and results were below the detection limits.

The method blank was analyzed by alpha spectroscopy for thorium-228, thorium-230, and thorium-232 and results were below the detection limits.

The instrument background checks were acceptable.

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Halaco Engineering Company
Project TDD Number: <i>T02-09-09-09-0002</i>	PAN: 002693,2053,01RA

6, DUPLICATE ANALYSES

v	Acceptable
<u> X</u>	_ Acceptable with qualification
	_ Acceptable with qualification _ Unacceptable
	No Duplicates Analyzed
Type of	duplicates analyzed:
<u> </u>	Field Duplicates
X	_ Laboratory Duplicates
(NAD) k Qualify	te the relative Percent Difference (RPD) and the Normalized Absolute Difference between the members of duplicate pairs using the equations indicated below. the detected results as estimated (J) for any analyte whose RPD in a laboratory te exceeds 20% for water samples or 35% for soil samples or whose NAD exceeds
	RPD = 2(Value 1 - Value 2) x 100% Value 1 + Value 2

RPD	= 2(Value 1 - Value 2) x 100%	
	Value 1 + Value 2	

70 - 70 - 70 - 70 - 70 - 70 - 70 - 70 -	그러 가격하는 것들이 되는 것 같아요. 끝든건 모든 바다 나를 받는 것들이 없었다.
I NAD E (Value 1 F Value 2)	
	11. 11. 12. 12. 12. 14. 14. 14. 14. 14. 14. 14. 14. 14. 14
1 3 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
((Ono 172) ((Ono 232))	2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1

Comments:

One laboratory duplicate was analyzed with every 20 samples (SME-S-002). A field duplicate sample was collected for sample SME-S-003 (SME-S-1003). The RPDs or NADs for all alpha and gamma spectroscopy analytes for the laboratory replicate and the field duplicate were acceptable for precision, below 35% RPD or 1.96 NAD, except a few gamma emitters with results that were below the detection limit, qualified with a UJ, or negative and were therefore not qualified. Each laboratory duplicate sample consisted of a second mass of the original sample, prepared and analyzed as a separate sample.

ANALYTICAL DATA REVIEW SUMMARY Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Halaco Engineering Company
Project TDD Number: <i>T02-09-09-09-0002</i>	PAN: 002693,2053,01RA

7. ANALYTE QUANTITATION
Confirm that analyte quantitation was performed correctly using the following formula:
Confirm that analyte quantitation was performed correctly using the following formul Analyte (pCl/g) =
8. OVERALL ASSESSMENT OF DATA
On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.
X Acceptable Acceptable with Qualification Rejected
ERS Screening Non-definitive with 10 % Conformation by Definitive Methodology Definitive, Comprehensive Statistical Error Determination was performed.
Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.
Comments:

Tier 2 Validation

Site Name: Halaco Building Assessment	Location: Halaco Engineering Company						
Project TDD Number: <i>T02-09-09-09-0002</i>	PAN: 002693.2053.01RA						

9. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: None.

Resolution:

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: November 16, 2009

Project: ECOL00209 Client ID: ECOL007

Company: Ecology & Environment, Inc. Address: 3700 Industry Ave.

Suite 102

Lakewood, California 90712 Ms, Mindy Song

Contact:

Project: Halaco CAM Metals Analysis

SME-S-002 239856002 Soil

Client Sample ID; Sample ID; Matrix; Collect Date; Receive Date;

23-OCT-09 10:30

27-OCT-09

	Collector:	. ,	Client	•			•	,		.*
	Moisture:		16.5%							
Parameter	Qualifier	Result		DL	RL	Units	DF	AnalystDate	Time Batch	Method
Rad Alpha Spec Analys	sis									
Alphaspec Th, Solid *Dr	y Weight Correct	ed"								
Thorium-228	υ	0.0212	+/-0.274	- 0.711	1.00	pCi/g		CXM211/12/09	1057 916611	1
Thorium-230	U	0,404	+/-0.386	0,431	1.00	pCi/g				
Thorium-232	U	0.151	+/-0,247	0,431	1.00	pCi/g				
Rad Gamma Spec Anal	lysis									
Gammaspec, Gamma, Sc	olid (Standard Lis	st) "Dry Weig	ht Corrected"			,				÷
Actinium-228	ับ	0,373	+/-0.316	0.379		pCi/g		MXR111/02/09	2255 916603	2
Americium-241	υ	-0.125	+/-0,140	0.198		pCi/g				
Antimony-124	U	-0.0228	+/-0.110	0.175		pCi/g				
Antimony-125	υ	0.109	+/-0.105	0,189		pCi/g				
Barium-133	υ	-0,00726	+/-0.0594	0,087		pCi/g				
Barium-140	υ	0.142	+/-0.253	0,432		pCi/g				
Beryllium-7	บ	-0,26	+/-0.375	0.600		pCl/g				
Bismuh-212	U	0.0458	+/-0,367	0.611		pCi/g				
Bismuth-214	U.	0.159	+/-0.157	0.201		pCi/g				
Cerium-139	Ù ·	-0.00899	+/-0.0302	0.0492		pCl/g				
Cerium-141	U	0.0433	+/-0.058	0.099		pCi/g				
Cerium-144	ប	0,073	+/-0,207	0.348		pCi/g				
Cesium-134	ប	0,0694	+/-0.0609	801.0		pCi/g				
Cesium-136	υ	-0.0666	+/-0.128	0,207	•	pCi/g				
Cesium-137	บ	0,00181	+/-0.0481	0.0799	0.100	pCi/g				_
Chromium-51	ָ ט י	-0.0669	+/-0.392	0.664		pCi/g				·
Cohalt-56	U	0.0204	+/-0.0534	0.0938		pCi/g				
Cobalt-57	บ	-0.0111	+/-0.0248	0.0404		pCi/g				
Cobalt-58	บ	-0.0153	+/-0.055	0.0881		pCi/g				
Cobalt-60	U	0.00982	+/-0.0587	0.0996		pCi/g				
Europium-152	U	-0.0143	+/-0.127	0.196		pCi/g				
Europium-154	υ	-0.00191	+/-0.180	0.300		pCi/g				
Europium-155	Ū	0.0606	+/-0.106	0.182		pCi/g				
Iridium-192	υ	0.0195	+/-0.0388	0.0678		pCi/g				
Iron-59	บ	0.127	+/-0.125	0.227		pCi/g				100
Lead-210	ט	-2.94	+/-2.52	3,93		pCi/g				
Lead-212		0.141	+/-0.101	0.109		pCi/g		í		
Lead-214		0.174	+/-0.144	0.139		pCi/g				1. 100
Manganese-54	U	-0.0206	+/-0.0459	0.0758		pCi/g		an other	has 12	110107
Mercury-203	υ		+/-0.0428	0.0741		pCi/g	M	prioto	YUL .	•
Neodymium-147	υ	-0.171	+/-0.516	0.842		pCi/g	\mathcal{O}	"		

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Certificate of Analysis

Company: Ecology & Environment, Inc.

Address:

3700 Industry Ave.

Spite 102

Lakewood, California 90712

Contact:

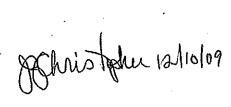
Ms. Mindy Song

Project:

Halaco CAM Metals Analysis

Report Date: November 16, 2009

	Client Sample ID: Sample ID:	SME-S-002 239856002			Proj Clie	ect: nt ID:	ECOL00209 ECOL007	
Parameter	Qualifier Re	sult Uncertainty	DL	RL,	Units	DF	AnalystDate	Time Batch Metl
Rad Gamma Spec Analy	sis	· ·				-		
Gammaspec, Gamma, Soi	lid (Standard List) "Dry \	Yeight Corrected"						
Neptunium-239	U -0.0332		0.318		pCi/g			
Niobium-94	บ -0,0065	+/-0.0436	0,0711		pCi/g			
Niobium-95	U 0.0486	+/-0,0526	0.0921		pCi/g			
Potassium-40	44,3	+/-3.98	0.722		pCi/g		,	
Promethium-144	U 0,0175	+/-0,0478	0.0809		pCi/g			1
Promethium-146	U -0,0197	+/-0.0625	0.0899		pCi/g			
Radium-228	U 0.373	+/-0.316	0.379		pCi/g			•
Ruthenium-106	U -0,166	+/-0.412	0,663		pCi/g			
Silver-110m	U -0,0218		0.0647		pCi/g			
Sodium-22	U -0.000152	+/-0,0642	0.107		pCi/g			
Thallium-208	U 0.0533	+/-0,0803	0.0958		pCi/g			
Thorium-234	U -1.49	+/-1.18	1.75		pCi/g		-	
Tin-113	U -0.0115	+/-0.0516	0.0862		pCi/g			
Uranium-235	U -0,0336	+/-0.246	0.369		pCl/g			
Uranium-238	U -1.49	+/-1.18	1.75		pCi/g			
Yttrium-88	U -0,00724		0,078		pCi/g			
Zinc-65	U -0.0589	+/-0.140	0.229		pCVg			
Zirconium-95	U 0.0042	+/-0.0906	0.150		pCi/g			
The following Prep Mer	thods were performed			•				
Method	Description			Analyst	Date	Time	Prep Batel	lı .
Dry Soil Prep	Dry Soil Prep GL-RA	D-A-021		MXP2	10/28/09	1621	916401	
The following Analytics	al Methods were perfor	ned						
Method	Description			A	malyst Comm	ents		•
1	DOE EML HASL-300	, Th-01-RC Modifi	ed					
2 .	DOB HASL 300, 4.5.2	.3/Ga-01-R			•			
Surrogate/Tracer recove	ery Test			Result	Nom	inai R	есочегу%	Acceptable Limits
Thorium-229 Tracer	Alphaspec Th, Sc	olid "Dry Weight C	orrected"		-		81,4	(15%-125%)



Report Date: November 16, 2009

ECOL00209 ECOL007

Project; Client ID;

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Certificate of Analysis

Company: Ecology & Environment, Inc.

Address:

3700 Industry Ave. Suite 102

Lakewood, California 90712

Contact:

Ms. Mindy Song

Project:

Halaco CAM Metals Analysis

Client Sample ID: Sample ID;

SME-S-003 239856003 Soil

Matrix: Collect Date: Receive Date:

23-OCT-09 10:35 27-OCT-09

Parameter Rad Alpha Spec Analysis	Qualifier										
Rad Alpha Spec Analysis	-	Result	Uncertainty	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
	•									**	-
Alphaspec Th, Solid "Dry V	Veight Correc	ted#			•						
Thorium-228	υ	-0.00396	+/-0,208	0.632	1.00	pCi/g		CXM211/12/09	1057 9	16611.	1
Thorium-230	บ	0.490	+/-0.455	0.574	1.00	pCi/g					
Thorium-232	ט'	0.0867	+/-0.184	0,282	1.00	pCi/g					
Rad Gamma Spec Analys	is		*			•					
Gammaspec, Gamma, Solid	d (Standard Li	st) "Dry Welg	ht Corrected"		•						
Actinium-228	` u/s	0.00 TIA	+/-0.229	0.292		pCi/g		MXR111/02/09	2256 9	16603	2
Americium-241		-0.00774	+/-0.166	0,283		pCi/g					
Antimony-124	บ	-0.0646	+/-0.070	0.102		pCi/g	-	•			
Antimony-125	υ	-0.00937	+/-0.082	0.138		pCi/g					
Barium-133	บิ	0,0511	+/-0.044	0.0675	-	pCi/g					
Barium-140	ΰ`	0.154	+/-0.193	0.326		pCi/g					
Beryllium-7.	U	-0.219	+/-0,277	0,443		pCi/g					
Bismuth-212	Ü	-0.0637	+/-0.309	0.460		pCi/g	•				
Bismuth-214		0,142	+/-0,131	0,121		pCi/g					
Cerium-139	υ	0.00716	+/-0.0238	0.0415		pCi/g					
Cerium-141	n	-0,0237	+/-0.0492	0.0736		pCi/g					
Cerium-144	U	-0.0859	+/-0.170	0.270		рСУ́g					
Cesium-134	บ	0.000433	+/-0.042	0.0708		pCi/g					
Cesium-136	บ	-0,0438	+/-0.0844	0.139		pCi/g			•		
Cesium-137	υ	0.0199	+/-0.0329	0.0582	0.100	pCi/g					,
Chromium-51	, U	. 0.0491	+/-0.300	0.497		pCi/g					
Cobalt-56	U	0.00821	+/-0.0391	0.0664		pCi/g					
Cobalt-57	υ	0.00608	+/-0.0211	0.035		pCi/g		4			
Cobalt-58	Ū	0.0253	+/-0.0324	0.0573		pCi/g					
Cobalt-60	U	-0.034	+/-0.037	0.0556		pCi/g					
Europium-152	υ	-0.00857	+/-0.0996	0.141		pÇi∕g					
Europium-154	υ	-0.0542	+/-0.111	0.177		pCi/g					
Europium-155	υ	-0.0298	+/-0.0899	0.146	•	pCi/g					
Iridium-192	U	0.00182	+/-0.0294	0.0486		pCi/g					
Iron-59	Ü	-0.0151	+/-0.0725	0.121		pCi/g					
Lead-210	υ	-42.5	+/-10.5	12.3	•	pCi/g					
Lead-212	Ų.	0.108	+/-0.0923	0.117		pCi/g					
Lead-214	υ	0,101	+/-0.126	0.108		pCi/g			1		
Manganese-54	υ	-0.0115	+/-0.0345	0.0565		pCi/g		- ^ 1	4	۸.	_12
Mercury-203	υ	0.0398	+/-0.0336	0,0586		pCi/g			1.37/X	WK	_ امٰل
Neodymium-147	υ	0.0789	+/-0.375	0.633		pCi/g		1400	14		

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Certificate of Analysis

Ecology & Environment, Inc. Company:

3700 Industry Ave. Suite 102 Address:

Lakewood, California 90712

Contact: Ms. Mindy Song

Project: Halaco CAM Metals Analysis Report Date: November 16, 2009

•	Client Sample ID: Sample ID:	SME-S-003 239856003			Proj Clie	ect: nt ID:	ECOL00209 ECOL007			· · · · · · · · · · · · · · · · · · ·
Parameter	Qualifier Re	sult Uncertainty	ŊĻ	RL	Units	DF	AnalystDate	Time	Batch	Meiho
Rad Gamma Spec Analys	is .			•						
Gammaspec, Gamma, Solid	l (Standard List) "Dry V	Yeight Corrected"								
Neptunium-239	U -0,0586		0.260		pCi/g					
Niobium-94	U -0.00463	+/-0.0321	0.0542		pCi/g					
Niobium-95	IJ 0,013		0.0597		. pCi/g					
Potassium-40	11.8		0.528		pCi/g		•			
Promethlum-144	U 0.0316		0.0597		pCi/g					
Promethium-146	U, -0.0105	+/-0.0379	0.0629		pCi/g		-			
Radium-228	0.00 Euliu		0,292		pCi/g					
Ruthenium-106	ປ໌ 0,0805		0,502		pCl/g	1				
Silver-110m	U -0,00771	+/-0.0305	0.0514		pCi/g					
Sodium-22	U -0,0256		0,063		pCi/g					
Thallium-208	0,057		0,0563		pCi/g					
Thorium-234	U -2.04		2,38		pCl/g					
Tin-113	U 0.0185		0.0638		pCi/g					
Uranium-235	U 0.0592		0.282		pCi/g		•			
Uranium-238	ບ -2.04		2.38		pCi/g					
Yttrium-88	U -0.00796		0.0594		pCl/g		•			
Zinc-65	U -0.0169	+/-0.0938	0.134		pCi/g					
Zirconium-95	ປ 0.00233	4-/-0.0598	0.102		pCi/g					
The following Prep Metl	ods were performed							1 30 mm		
Method	Description			Analyst	Date	Tim	e Prep Bate	1		
Dry Soil Prep	Dry Soil Prep GL-RA	D-A-021		MXP2	10/28/09	162	916401			
The following Analytical	Methods were perfor	ned								
Method	Description			4	Analysi Comm	ents				
1	DOE EML HASL-300), Th-01-RC Modifi	ied							
2	DOE HASL 300, 4.5.2	2.3/Ga-01-R			•					
Surrogate/Tracer recover	y Test			Result	Nom	inal I	Recovery%	Accept	able Li	mits
Thorium-229 Tracer		olid "Dry Weight C	'orrected"				73.9	(15	%-1259	6)

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Certificate of Analysis

Ecology & Environment, Inc. Company:

Address: 3700 Industry Ave.

Suite 102

Matrix:

Lakewood, California 90712

Ms. Mindy Song Contact:

Project: Halaco CAM Metals Analysis Report Date: November 16, 2009

ECOL00209

ECOL007

Project:

Client ID:

Client Sample ID: Sample ID:

SME-\$-1003

239856004

Soil

Collect Date: 23-OCT-09 10:37 Receive Date: 27-OCT-09 Collector: Client

Moisture:

17.1% Parameter Time Batch Method Units DF AnalystDate Qualifier Result Uncertainty DLRL Rad Alpha Spec Analysis Alphaspec Th, Solid "Dry Weight Corrected" CXM211/12/09 1042 916611 1.00 pCi/g +/-0,250 0.277Thorium-228 U 0.176 +/-0,295 0.271 1.00 pCi/g Thorium-230 U 0.251 pCi/g Thorium-232 υ 0.0828+/-0.177 0.271 1.00 Rad Gamma Spec Analysis Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected" pCi/g MXR111/03/09 0933 916603 +/-0.253 0.383 Actinium-228 0.0435 +/-0.218 0.361 pCi/g Americium-24) u -0.101 0.171 pCi/g -0.0296 +/-0.110 Antimony-124 U pCi/g Antimony-125 U 0.0491 +/-0.103 0,178 U Barium-133 0.0372 +/-0.0513 0.0814 pCi/g pCi/g +/-0,250 0.403 Barium-140 -0.0317pCi/g U 0,0458 +/-0.350 0.584 Beryllium-7 Ü U Bismuth-212 0.533 +/-0.366 0.690 pCi/g 0,195 pCi/g +/-0.172 Bismuth-214 0.142 Cerium-139 U -0.0316 +/-0,0329 0.0504 pCi/g υ υ Cerium-141 +/-0.0559 0.0935 0:0183 nCi/g +/-0.195 0.311 Cerium-144 -0.0936 Cesium-134 υ 0.0176 +/-0.0575 0.0996 pCi/g Ū +/-0.124 0.220 pCl/g 0.0828 Cesium-136 0.100 υ +/-0.0464 0.0759 pCi/g Cesium-137 -0.0199Chromium-51 υ -0.0792+/-0.389 0.648 pCi/g ΰ +/-0.0481 0.0817 pCi/g 0.00629Cobalt-56 pCi/g 0.0455 Cobalt-57 υ -0.00214+/-0.0311 pCi/g Cobalt-58 υ -0.0308 +/-0.0453 0.0698 0.00344 +/-0.0484 0.0828 pCi/g U Cobalt-60 Europium-152 υ 0.110 +/-0.118 0.210 pCl/g υ -0.0248 +/-0.156 0,259 pCi/g Europium-154 pCl/g +/-0.110 0.183 Europium-155 U 0.000753 Iridium-192 υ 0.0175 +/-0,0385 0.067 pCi/g Ū +/-0,0895 0.132 pCi/g Iron-59 -0,0529 16.2 pCi/g Lead-210 υ -11.5 +/-12.1 Lead-212 υ 0.0449 +/-0.0931 0.136 pCi/g pCi/g UI, 0.00 +/-0.140 0,181 Lead-214 pCi/g 0.0741 -0.0161 +/-0.0459 Manganese-54 pCl/g Mercury-203 0.0198 +/-0,0429 0.0751 pCi/g Neodymium-147 +/-0.531 0.917 0.330

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Certificate of Analysis

Company: Ecology & Environment, Inc.

Address:

3700 Industry Ave.

Suite 102

Lakewood, California 90712

Contact:

Ms. Mindy Song

Project:

Halaco CAM Metals Analysis

Project: Client ID: Client Sample ID: SME-S-1003 **ECOL00209** 239856004 ECOL007 Sample ID: Parameter Qualifier Result Uncertainty DL RL Units AnalystDate Time Batch Method Rad Gamma Spec Analysis Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected" Neptunium-239 -0.00567 +/-0.190 pCi/g U 0.313 Niobium-94 0.0421 +/-0.0471 0,0852 pCi/g U +/-0,048 0.0781 pCi/g Niobium-95 U -0.0163 +/-2.11 pCi/g Potassium-40 13,6 0.793 Promethium-144 Ū -0.0361 +/-0.0508 0,0747 pCl/g Promethium-146 υ 0.0635 +/-0,0525 0.0949 pCi/g Radium-228 U 0.0435 +/-0.253 0.383 pCi/g +/-0.394 0.679 Ruthenium-106 U 0.0262 pCi/g Silver-110m U -0.0155 +/-0.0434 0.0716 pCi/g Sodium-22 U -0.00489 +/-0,0552 0.0926 pCi/g Thallium-208 U 0.0462 +/-0.0724 0.092 pCi/g Thorium-234 U -1.21 $\pm 1/-2.17$ 3.05 pCi/g Tin-113 U -0.0422 +/-0.0467 0.0715 pCi/g Uranium-235 U -0.234 4/-0.241 0.333 pCi/g pCi/g Uranium-238 -1.21 +1-2.173.05 U Ytoium-88 U 0.011 +/-0.0475 0.0824 pCi/g pCi/g 0.176 Zinc-65 U -0.0949+/-0.119 +/-0.0778 Zirconium-95 IJ 0.0788 0.144 pCi/g The following Prep Methods were performed Time Prep Batch Method Description Analyst Date Dry Soil Prep Dry Soil Prep GL-RAD-A-021 MXP2 10/28/09 1621 916401 The following Analytical Methods were performed Method Analyst Comments Description DOE EML HASL-300, Th-01-RC Modified DOE HASL 300, 4.5.2,3/Ga-01-R 2 Acceptable Limits Surrogate/Tracer recovery Result Nominal Recovery %

Alphaspec Th, Solid "Dry Weight Corrected"

FChristophen 12/10/09

(15% - 125%)

79.4

Report Date: November 16, 2009

Thorium-229 Tracer

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Certificate of Analysis

Company: Ecology & Environment, Inc.

3700 Industry Ave. Suite 102 Address:

Lakewood, California 90712

Ms. Mindy Song Contact:

Project: Halaco CAM Metals Analysis

Client Sample ID: Sample ID:

Matrix:

239856006 Soil

Collect Date:

23-OCT-09 10:42

Receive Date:

27-OCT-09

SME-S-005

Collector: Moisture:

Client

18.6%

Parameter	Qualific	r Result	Uncertainty	DL	RL	Units
Rad Alpha Spec Analysis	3		·			
Alphaspec Th, Solid "Dry	Weight Correc	rted"				
Thorium-228	ັ້ນ	0.0331	+/-0.162	0,434	1,00	pCi/g
Thorium-230		0,271	+/-0,282	0.230	1.00	pCi/g
Thorium-232	U	0.110	+/-0.214	0.425	· 1.00	pCl/g
Rad Gamma Spec Analys	sis					•
Gammaspec, Gamma, Soli	d (Standard L	ist) "Dry Weig	ht Corrected"			
Actinium-228	บ	-0.225	+/-0.164	0.232		pCi/g
Americium-241	υ	0.0535	4/-0.0983	0.174		pCi/g
Antimony-124	Ú	-0,0728	+/-0.0758	0.103		pCi/g
Antimony-125	. U	0.039	+/-0.0901	0.154		pCi/g
Barium-133	U	0,0157	+/-0.0417	0.0636	•	pCi/g
Barium-140	υ	0.244	+/-0.204	0.355		pCi/g
Beryllium-7.	บ	-0.0574	+/-0,282	0,455		pCi/g
Bismuth-212	. U	0,245	+/-0.260	0.472		pCi/g
Bismuth-214	บ	0.102	+/-0.136	0.154		pCi/g
Cerium-139	U	-0.0148	4/-0.023	0.0363	•	pCl/g
Cerium-141	Ų	-0.0193	+/-0.0507	0.0743		pCi/g
Cerium-144	υ	0.000416	+/-0.156	0,260		pCi/g
Cesium-134	υ.	0.000814	+/-0.0498	0.0759		pCi/g
Cesium-136	υ	-0.0703	+/-0.102	0.163		pCi/g
Cesium-137	U	-0.0255	+/-0.0476	0.068	0.100	pCi/g
Chromium-51	υ	0.067	+/-0.300	0.514		pCi/g
Cobalt-56	υ	-0.0173	+/-0.040	0.0636		pCi/g
Cobalt-57	U	0.000777	+/-0.0189	0.0316		pCi/g
Cobalt-58	υ .	0.0221	+/-0.0397	0.0694		pCi/g
Cobalt-60	υ		+/-0.0459	0.0788		pCi/g
Europium-152	υ	0.0426	+/-0.0844	0.147		pCi/g
Europium-154	U	-0.0074	+/-0.141	0.235		pCi/g
Europium-155	υ	0,0575	+/-0.0791	0.138		pCi/g
Iridium-192	U,	0.00776	+/-0.0299	0.0515		pCi/g
Iron-59	υ		+/-0.0964	0.180	•	pCi/g
Lead-210	υ	-1,63	+/-2.91	4.27		pCi/g
Lead-212	υ		+/-0.0829	0.102		pCi/g
Lead-214	บ		+/-0,0936	0.132		pCi/g
Manganese-54	บ	-0.00707	+/-0.036	0.0586		pCi/g
Mercury-203	υ		+/-0.0379 `	0.0521		pCl/g
Neodymium-147	υ	-0.0609	+/-0.399	0.640		pCl/g

Report Date: November 16, 2009

Project: Client ID:

ECOL00209 ECOL007

AnalystDate

CXM211/12/09 1042 916611 1

MXR111/03/09 0934 916603 2

Time Batch Method

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Certificate of Analysis

Company: Ecology & Environment, Inc.
Address: 3700 Industry Ave.
Suite 102

Lakewood, California 90712 Ms. Mindy Song

Contact:

Project:

Halaco ĆAM Metals Analysis

Report Date: November 16, 2009

	Client Samp Sample ID:	ole ID:	SME-S-005 239856006			Proj Clie	ect: nt ID;	ECOL00209 ECOL007		
Parameter	Qualifier	Result	Uncertainty	DL	RL	Units.	DF	AnalystDate	Time Ba	tch Metl
Rad Gamma Spec Analysi	s									
Gammaspec, Gamma, Solld	(Standard Li	si) "Dry Welg	th Corrected"			•			•	
Neptunium-239	υ	-0.0132	+/-0.144	0.239		pCi/g			,	
Niobium-94	υ	-0.00369	+/-0.0342	0.0572		pCi/g				
Niobium-95	ΰ	0.00193	+/-0.0409	0.0687		pCi/g				
Potassium-40		32.1	+/-2.95	0.620		pCl/g	-	•		
Promethium-144	υ	0.0137	+/-0.0362	0.0629		pCi/g				
Promethium-146	υ	0.0109	+/-0.0395	0.0666		pCi/g			•	
Radium-228	บ	-0.225	+/-0.164	0.232		pCi/g				
Ruthenium-106	υ	-0.163	+/-0.306	0.497		pCi/g				
Silver-110m	ប.	-0.0223	+/-0.0346	0.0554		pCi/g				
Sodium-22	บ	-0.00265	+/-0.0502	0.0838		pCi/g			•	
Thallium-208	U	-0.0328	+/-0.0428	0.0663		pCi/g				•
Thorium-234	. U	-0.587	+/-1.04	1,63		pCi/g				
Tin-113	U	-0.019	+/-0.0395	0.0634		pCi/g				
Uranium-235	υ	-0.00488	+/-0.194	0.294		pCi/g				
Uranium-238	υ	-0.587	+/-1.04	1,63		pÇi/g	•			
Yttrium-88	ប	0,0139	+/-0.0353	0.0639	•	pCl/g			-	
Zinc-65	υ	-0.102	+/-0.108	0.169		, pCi/g				•
Zirconium-95	υ	0.016	4/-0.0585	0.101		pCi/g				
The following Prep Meth	ods were ner	formed								
	Description				Analysi	Date	Time	Prep Bate	h	
Dry Soil Prep	Dry Soil Pre	p GL-RAD-A	N-021		MXP2	10/28/09	1621	916401		
. The following Analytical:	Methods wer	e performed	I	•						
	Description				· A	nalyst Comm	ents	· · · · ·		,
1	DOB EML I	IASL-300, TI	-01-RC Modifi	ed						
2	DOE HASL	300, 4.5.2.3/0	3a-01-R		•			•		
Surrogate/Tracer-recovery	y Test				Result	Nom	inal R	lecovery%	Acceptable	Limits
Thorium-229 Tracer		nec Th. Solid	"Dry Weight C	onrected*			······································	88.7	(15%-1	25%)

Report Date: November 16, 2009

ECOL00209 ECOL007

Project; Client ID;

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Certificate of Analysis

Company: Ecology & Environment, Inc.

3700 Industry Ave. Address:

Suite 102

Lakewood, California 90712

Ms, Mindy Song Contact:

Project: Halaco CAM Metals Analysis

SME-S-006

Client Sample ID: Sample ID: Matrix: Collect Date:

239856007 Soil 23-OCT-09 11:10

Receive Date:

27-OCT-09

Collector:

Client

.]	Moisture:		21%	1 .						
Parameter	Qualifier	Result	Uncertainty	DĹ	RL	Units	DF	AnalystDate	Time Bate	h. Method
Rad Alpha Spec Analysis			,	·····						
Alphaspec Th, Solid "Dry W	eight Correc	ted"		•	•					
Thorium-228	ับ	0.0855	+/-0.257	0.590	1,00	pCi/g		CXM211/12/09	1042 916611	. 1
Thorium-230		0.512	+/-0.415	0.263	1.00	pCi/g			*	
Thorium-232		0.519	+/-0.418	0.263	1,00	pCi/g				
Rad Gamma Spec Analysis	Ś				• '	. •				
Gammaspec, Gamma, Solid	(Standard Li	si) "Dry Weig	hi Corrected ^a							
Actinium-228	υ	0.140	+/-0.175	0,307		pCi/g		MXR111/03/09	0934 916603	3 2
Americium-241	บั	0.0282	+/-0.153	0,233		pCi/g	•		.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
Antimony-124	บั		+/-0.0763	0.125	•	pCi/g				
Antimony-125	บั		+/-0,0904	0,155		pCi/g			•	
Barium-133	ŭ		+/-0.0447	0.0649		pCi/g				
Barium-140	· ŭ	0.107	+/-0,203	0.347		pCi/g				
Beryllium-7	บี	-0.289	+/-0,315	0,496		pCi/g				
Bismuth-212	บี '	0.342	+/-0.291	0.521		pCi/g				
Bismuth-214	บั		+/-0.0932	0.144		pCl/g				
Cerium-139	ΰ.		+/-0.0273	0.0444		pCi/g				
Cerium-141	Ŭ		+/-0,0512	0.0851		pCi/g				
Cerium-144	บั	0.0406	+/-0.220	0.326		pCi/g				•
Cesium-134	_		+/-0.0473	0.0808		pCl/g				
Cesium-136		-0.00452	+/-0,115	0.192		pCi/g				
Cesium-137	ΰ		+/-0.0405	0.0679	0.100' '	pCi/g				
Chromium-51	บั	-0,25	+/-0.314	0.514		pCi/g		•		
Cobalt-56	บั		+/-0.0447	0.0784		pCi/g				
Cobalt-57	ΰ		+/-0.0235	0,0397		pCl/g				
Cobalt-58	ū		+/-0.0402	0.0699		pCl/g		•		
Cobalt-60	ΰ		+/-0.0485	0.0882		pCi/g				
Europium-152	บั		+/-0,0949	0.155		pCi/g		-		
Europium-154	ũ	0.0233	4/-0.153	0.258		pCi/g				
Europium-155			4/-0.0926	0.156		pCi/g				
lridium-192	. ប		+/-0.0316	0.0538		pCi/g				
lron-59	ΰ	0.0312	+/-0,115	0.197		pCi/g				
Lead-210	บ็	-4.05	+/-4.10	6.22		pCi/g				
Lead-212	ΰ		+/-0.0911	0.118		pCi/g				
Lead-214	ŭ		+/-0.0845	0.127		pCi/g		_		
Manganese-54	ŭ		+/-0.0454	0.0697		pCi/g	٠ _	$\Delta \Delta L$	1	
Mercury-203	ΰ		+/-0.0339	0,060		pCi/g		\"JA"\\\.	ZK 44 14	, h
		~				10		16/11 11/11/	/ 1 L / 10 / 10 / 10 / 10 / 10 / 10 / 10	- IO

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company: Ecology & Environment, Inc.
Address: 3700 Industry Ave.
Suite 102

Lakewood, California 90712

Contact:

Ms. Mindy Song

Project: Halaco CAM Metals Analysis Report Date: November 16, 2009

	Client Sample ID; Sample ID;	SME-S-006 239856007	,		Proj Clie	eot: nt ID:	ECOL00209 ECOL007		1
Parameter	Qualifier Resu	di Uncertainty	DL	RL	Units	nr	AnalystDate	Time Batel	h Method
Rad Gamma Spec Analy	sis			 					
Ganmaspec, Gamma, Soli	d (Standard List) "Dry We	ight Corrected's			•			•	
Neptunium-239	U -0.14	+/-0.175	0.284		pCi/g				
Niobium-94	υ -0.00396	+/-0.036	0.0587		pCi/g		-		
Niobium-95	U 0,0294	+/-0.0441	0.0759		pCi/g				
Potassium-40	54,0	+/-5.17	0.664		pCi/g				
Promethium-144	U 0.00924	+/-0.0371	0.0622	•	pCi/g				
Promethium-146	U 0.00257	+/-0.0405	0,0685		pCi/g				
Radium-228	U 0,140	+/-0.175	0,307		pCi/g		*		
Ruthenium-106	U -0.391	+/-0.341	0.513		pCi/g		•		
Silver-110m	U -0,00921	+/-0.0378	0.0613		pCi/g				
Sodium-22	. U 0.0106	+/-0.0549	0.0929		pCi/g				
Thallium-208	U 0.0264	+/-0.0539	0.0554		pCi/g				
Thorium-234	U 0,163	+/-1.51	1.89		pCi/g				
Tin-113	Ŭ •0,014	+/-0.0411	0.0682		pCi/g				
Uranium-235	U -0.0666	+/-0.229	0,301		pCi/g		•		
Uranium-238	U 0.163	4/-1.51	1,89		pCi/g				
Yttrium-88	U -0.0161	+/-0.0424	0.0671		pCl/g				
Zinc-65	U -0.0768	+/-0.122	0.196		pCi/g				
Zirconium-95	U -0.0253	+/-0.0741	0.118		pCi/g			•	
The following Prep Metl	iods were performed	•							
Method	Description			Analyst	Date	Time	Prep Batel	1	
Dry Soll Prep	Dry Soil Frep GL-RAD	-A-02]	-	МХР2	10/28/09	1621	916401		
The following Analytical	Methods were performe	d			•				•
Method	Description			A	nalyst Commo	ents			
}	DOE EML HASL-300, 7	Th-01-RC Modifi	ed				 		
2	DOE HASL 300, 4.5.2.3	/Ga-01-R							
Surrogate/Tracer recover	y Test			Result	Nomi	láal R	ecovery%	Acceptable Li	mits
Thorium-229 Tracer	Alphaspec Th, Soli	d "Dry Weight C	prrected"			-	79.1	(15%-1259	5)

Report Date: November 16, 2009

ECOL00209 ECOL007

Project: Client ID;

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company: Ecology & Environment, Inc.

Address;

3700 Industry Ave. Suite 102

Lakewood, California 90712

Contact:

Ms. Mindy Song

Project:

Halaco CAM Metals Analysis

Client Sample ID: Sample ID:

BAG-S-001 239856008 Soil

Mairix:

Collect Date: Receive Date: 23-OCT-09 07:00 · 27-OCT-09

Collector:

Client

M	loisture:		25.9%						•			_
Parameter	Qualifier	Result	Uncertainty	ĐĻ	RL	Units	DF	AnalysiDate	Time :	Batch	Method	-
Rad Alpha Spec Analysis	*		,					·				•
Alphaspec Th, Solid "Dry Wei	ight Corrected	n										
Thorium-228	υ -	0.0574	₁/-0.169	0.565	1,00	pCi/g		CXM211/12/09	1009.91	6611	1	
Fhorium-230		0.228	+/-0.148	0.395	1.00	pCi/g					-	
Thorium-232		0.0244	+/-0.144	0.342	1.00	pCl/g						
Rad Gamma Spec Analysis						r			•			
Gammaspec, Gamma, Solid (S	Standard List)	"Dry Weigi	hi Corrected"									
Actinium-228	•	0.0234	+/-0.155	0.232		pCi/g		MXR111/03/09	0946 91	6603	2	•
Americium-241		0.0169	+/-0.159	0.272		pCi/g		112211 1 11 05105	0, 10 ,	0000	-	
Antimony-124			+/-0.0813	0.139		pCi/g	·					
Antimony-125			+/-0.0779	0.135		pCi/g						•
Barium-133			+/-0.0402	0.0565		pCi/g						
3arium-140		00965	+/-0,184	0.306		pCi/g		•				
Beryllium-7		0.0733	+/-0.257	0.441		pCi/g						
3 ismuth-212).0838	+/-0.285	0,425		pCl/g		•				
Bismuth-214			+/-0.0892	0.139		pCl/g						
Cerium-139	_		+/-0.0223	0.0375		pCi/g			٠,			
Cerium-141			+/-0.0475	0.0804		pCi/g						
Cerium-144		0.0341	+/-0.175	0.288		pCi/g						
Cesium-134			+/-0.0383	0.0613		pCi/g		•				
Ceslum-136			1/-0.0812	0,134		pCi/g						
Cesium-137			1/-0.0315	0.0543	0.100	· pCi/g						
Chromium-51		.0271	+/-0.290	0,474		pCi/g						
Cobalt-56			+/-0,0366	0.063		pCi/g						
Cobalt-57			+/-0.0203	0.034		pCi/g						
Cobalt-58			+/-0.0354	0.0607		pCi/g						
Cobalt-60	บ	0.037	4/-0.039	0.0709		pCi/g						
turopium-152	บั	0.084	+/-0.091	0.147		pCl/g						•
luropium-154		.0555	+/-0.106	0.168	1	pCi/g						
luropium-155			+/-0,0858	0.140		pCi/g			*			
ridium-192				0.0461		pCi/g		•			•	
ron-59			+/-0.0741	0.123		pCi/g						
ead-210		-31.5	+/-9.78	12,4		pCi/g						
.ead-212			r/-0.0632	0.101		pCi/g			,			
.ead-214 .		0.110	+/-0.127	0.128		pCi/g			1	A		_
fanganese-54				0.0574		pCi/g	^	101	7	ÿ		ام ا اما
Jercury-203				0.0542		pCi/g	()	30 W	Mr	Me	L	12/10/09
leodymium-147	บ	0.125	+/-0.388	0.662		pCi/g		$\gamma V/V/\psi$	~~ <i>(9</i> 7	ŗ		. ,

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Certificate of Analysis

Company: Ecology & Environment, Inc. Address: 3700 Industry Ave.

Suite 102

Lakewood, California 90712

Ms. Mindy Song

Contact:

Halaco CAM Metals Analysis Project:

Report Date: November 16, 2009

	Client Sample ID: Sample ID:	BAG-S-001 239856008	₹		Proje Clies	ect: nt ID;	ECOL00209 ECOL007			
Parameter .	Qualifier Resul	t Uncertainty	DL	RL	Units	DF	AnalystDate	Time	Batch	Metho
Rad Gamma Spec Ana	lysis					• .	• • • • • • • • • • • • • • • • • • • •			
Gammaspec, Gamma, So	olid (Standard Llst) "Dry Wei	ght Corrected"						•		
Neptunium-239	U 0,0274	+/-0.149	0.246		pCi/g		ŧ			
Niobium-94	U -0.0017	+/-0.0323	0.0548		pCi/g		•			
Niobium-95	U 0.0341	+/-0,033	0.0597		pCi/g					
Potassium-40	6.97	+/-1.39	0.552		pCi/g					•
Promethium-144	U -0.00606	+/-0.034	0.0573		· pCi/g					
Promethium-146	U 0.0053	+/-0.0365	0.0622		pCi/g					
Radium-228	U -0.0234	+/-0.155	0.232		pCi/g					
Ruthenium-106	U -0.168	+/-0.300	0,470		pCi/g					•
Silver-110m	· U 0.0158	+/-0.0291	0.0517		pCi/g					
Sodium-22	U -0.0239	+/-0,0384	0.0602		pCi/g					
Thallium-208	U. 0,0335	+/-0.0582	0.0548		pCi/g		•			
Thorium-234	U -2,28	+/-1.63	2,29		pCi/g					
Fin-113	U 0,00846	+/-0.035	0.0607		pCi/g					
Uranium-235	υ 0,106	+/-0.198	0,297		pCi/g					
Uranium-238	U -2.28	+/-1,63	2.29		pCi/g					_
Yttrium-88	U 0,0291	+/-0.0433	0.0781		pCi/g					
Zinc-65	U -0.105	+/-0.0771	0.114		pCi/g					
Zirconium-95	ັ ປ 0.0336	+/-0.0557	0.0985		pCi/g		÷			
The following Prep Me	ethods were performed							,		
Method	Description			Analyst	Date ·	Time	Prep Batch	1		
Dry Soil Prep	Dry Soil Prep GL-RAD-	A-021		МХР2	10/28/09	1621	916401			
The following Analytic	eal Methods were performed	1			•					
Method	Description			A	nalyst Commo	nis	•			
j	DOB EML HASL-300, T	h-01-RC Modifi	ed						•	
2	DOE HASL 300, 4,5.2.3/	Ga-01-R								
Surrogate/Tracer recov	ery Test			Result	Nomi	nal R	ecovery%	Acceptal	ie Lin	iis
Chorium-229 Tracer	Alphaspec Th, Solid	"Dry Weight C	orrected"			·	97.2	(15%	-125%)

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Certificate of Analysis

Company:

Boology & Environment, Inc.

Address:

3700 Industry Ave.

Suite 102

Lakewood, California 90712

Contact:

Ms, Mindy Song

Project:

Parameter

Hulnco CAM Metals Analysis

Project:

Client ID:

ECOL00209

AnalystDate

CXM211/12/09 1009 916611

MXR111/03/09 0955 916603

ECOL007

Report Date: November 16, 2009

Client Sample ID; Sample ID:

BAG-S-002 239856009

Soil

Matrix:

Collect Date:

23-OCT-09 10:55

Receive Date:

27-OCT-09

Collector: Moisture:

Client 16.9%

Qualifier Result Uncertainty DL RL Units Rad Alpha Spec Analysis Alphaspec Th, Solid "Dry Weight Corrected" pCi/g 0,458 1,00 Thorium-228 0.238 +/-0.297 υ Thorium-230 υ 0.151 +/-0.221 0.352 1,00 pCi/g +/-0.201 0.352 1.00 pCi/g Thorium-232 U 0.122 Rad Gamma Spec Analysis Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected" Actinium-228 0.118 +/-0.177 0.316 pCi/g pCi/g +/-0.123 0.165 Americium-241 U -0.258-0.0396 1/-0.0958. 0.145 pCi/g Antimony-124 υ Antimony-125 υ -0.0586 +/-0.0978 0.158 pCi/g 0.0776 Barium-133 υ +/-0.0487 pCi/g 0.0484 U +/-0.239 pCi/g Barium-140 0.0636 0.406 pCi/g U 0.198 +/-0.339 0,593 Berylllum-7 +/-0,341 0.564 pCi/g Bismuth-212 U. 0.0145 pCi/g Bismuth-214 UΙL O.00 +/-0.149 0.174 -0.0099 +/-0.0272 0.0441 pCi/g Cerium-139 υ +/-0,0517 0.0863 pCi/g Cerium-141 υ 0.00702 pCi/g Cerium-144 U -0.0471 +/-0.174 0.284 +/-0.052 0.0861 pCi/g Cesium-134 υ 0.00476 υ 0.0485 +/-0.104 0.183pCi/g Cesium-136 0.100 Cesium-137 υ 0.012 +/-0.0427 0.0723 pCi/g 0.627 υ 0.223 +/-0,356 pCi/g Chromium-51 0.0809 Cobalt-56 υ 0.0114 +/-0.0464 pCi/g U -0.0319 +/-0.0223 0.034 pCi/g Cobalt-57 +/-0.0456 0.0737 pCi/g Cobalt-58 U -0.00654 Cobalt-60 U -0.006024/-0.0526 0.0866 pCi/g +/-0.108 0.170 pCi/g Europium-152 U -0.0292 nCi/g Europium-154 0.0915 4/-0.159 0.282 U Europium-155 U 0.118 +/-0.0932 0,164 pCi/g +/-0.0356 0,060 pCi/g Iridium-192 υ -0.00884 -0.0474 0.182 pCi/g +/-0.112 Iron-59 υ Lead-210 U -3.07 +/-2,21 3.49 pCi/g +/-0.0936 0.127 pCi/g Lead-212 υ 0.0486 pCi/g 0.147 Lend-214 +/-0.112 υ 0.119 Manganese-54 -0,00681 +/-0,0443 0.0749 pCi/g +/-0.0376 0.0634 pCi/g Mercury-203 U -0.0105 0.813 pCl/g

+/-0.471

0.201

Time Batch Method

Neodymium-147

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Certificate of Analysis

Company: Ecology & Environment, Inc.

Address:

3700 Industry Ave.

Suite 102

Lakewood, California 90712

Contact:

Ms, Mindy Song

Project:

Halaco CAM Metals Analysis

BAG-S-002 Project: Client ID; ECOL00209 Client Sample ID: ECOL007 Sample ID: 239856009 Parameter Qualifier RLUnits DIF AnalystDate Time Batch Method Result Uncertainty DLRad Gamma Spec Analysis Gammaspec, Gamma, Solid (Standard List) "Dry Weight Corrected" pCi/g 0.0303 +/-0.165 0.277 Neptunium-239 U pCi/g -0,0136 +/-0.0419 0.0673 Niobium-94 U Niobium-95 U 0.0183 +/-0.0476 0.0808 pCi/g +/-3.32 pCl/g Potassium-40 35.5 0.611 Promethlum-144 U 0.00718 +/-0.0436 0.0729 pCi/g Promethium-146 -0.0461 +/-0.0538 0.0751 U 0.316 Radium-228 U +/-0.177 0.118 0.620 Ruthenium-106 U 0.086 +/-0,367 pCi/g -0,0433 +/-0,0373 0.0541 Silver-110m U pCl/g +/-0.0569 0.101 Sodium-22 U 0.0327 0.0711 Thallium-208 U 0.0134 +/-0.0623 pCl/g +/-1.00 1.66 Thorium-234 U 0.727 Ü +/-0,0471 0.0796 pCi/g Tin-113 -0.00148 Uranium-235 U -0.0549 +/-0.215 0.327 pCi/g Uranium-238 IJ 0,727 +/-1.00 1,66 pCi/g 0.0891 Yttrium-88 U 0.0239 +/-0.0487 i pCi/g pCi/g Zinc-65 U -0.115 +/-0.120 0.185 Zirconium-95 0,0261 +/-0.0787 0.133 pCi/g The following Prep Methods were performed Analyst Date Time Prep Batch Method Description MXP2 10/28/09 1621 916401 Dry Soil Prep. Dry Soil Prep GL-RAD-A-021 The following Analytical Methods were performed **Analyst Comments** Mathod Description DOE EML HASL-300, Th-01-RC Modified 2 DOE HASL 300, 4.5.2,3/Ga-01-R Acceptable Limits Nominal Recovery % Surrogate/Tracer recovery Result

Alphaspec Th, Solid "Dry Weight Corrected"

& Christophu 21:0/09

(15% - 125%)

96,4

Report Date: November 16, 2009

Thorium-229 Tracer

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: November 16, 2009

ECOL00209 ECOL007

Project: Client ID;

Company: Bcology & Environment, Inc.

Address:

3700 Industry Ave. Suite 102

Lakewood, California 90712 Ms. Mindy Song

Contact:

Project:

Halaco CAM Metals Analysis

Client Sample ID: Sample ID: Matrix: Collect Date:

BAG-S-003 239856010 Soil

Receive Date:

23-OCT-09 11:00 27-OCT-09

Collector:

Client

Moisture:

13.9%

Parameter .	,	Qualifier	Result	Uncertainty	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Rad Alpha Spec A	nalysis											
Alphaspec Th, Solle	d "Dry We	ight Correc	ted "	1	,							
Thorium-228			1,02	+/-0,622	0.613	1.00	pCi/g		CXM211/12/09	1010 9	16611	1
Thorium-230		•.	1,45	+/-0.709	0.523	1.00	pCi/g					
Thorium-232			0.677	+/-0.472	0.257	1.00	pCi/g					
Rad Gamma Spec	Amplysis						• -			•		
Gammaspec, Gamm	na, Solid (Standard Li	isi) "Dry Weig	ht Corrected"		•						
Actinium-228	,		0,374	+/-0.266	0.191		pCl/g		MXR111/03/09	0955 9	16603	2
Americium-241		υ	0.0585	+/-0,120	0.183		pCi/g					_
Antimony-124		. Ŭ	0.00906	+/-0,0826	0.141	-	pCi/g					
Antimony-125		บ	0.0107	+/-0.0908	0.155		pCi/g		,			
Barium-133		ΰ	-0.00735	+/-0,0471	0.0689		pCl/g					
Barium-140		ΰ	-0.00398	+/-0.195	0.328		pCi/g		•			
Beryllium-7		ΰ	0.112	+/-0.291	0.505	•	pCi/g					
Bismuth-212		ΰ	0.458	+/-0.277	0.516		pCi/g					
Bismuth-214		-	0.322	+/-0,148	0.120		pCi/g		1,			
Cerium-139		υ	-0.00785	+/-0.0253	0.0411		pCi/g					
Cerium-141		υ	-0.00482	+/-0.0558	0.0844	,	pCi/g					
Cerium-144		υ	0.0445	+/-0.172	0.288		pCi/g					
Cesium-134		υ	0.0564	+/-0.0497	0.0894		pCi/g					
Cesium-136		υ	-0.0766	+/-0.0903	0.141		pCi/g					
Cesium-137		บ	0.030	+/-0.0381	0.0673	0.100	pCi/g	~e.	•			
Chromium-51		υ	-0.149	+/-0.320	0,532		pCi/g	•	•			
Cobalt-56		. υ	-0.00798	+/-0.0409	0.0661		pCi/g					
Cobalt-57		υ	0.00654	+/-0.0237	0.0365		pCi/g					
Cobalt-58		υ	-0.0117	+/-0.0408	0.0656		pCi/g					•
Cobalt-60		บ	0.0234	+/-0.0433	0.0775		pCi/g					
Europium-152	,	U	-0.109	+/-0.124	0.143	•	pCi/g					
Europium-154		Ù	-0.0121	+/-0.120	0.201		pCi/g					
Europium-155		υ	0.109	+/-0,0873	0,153		pCi/g					
tridium-192		υ	0,0216	+/-0.0319	0.0563		pCi/g					
Iron-59		ប	0.0178	+/-0.0863	0,150		pCi/g					
Lead-210		υ	-1.78	+/-2.76	4.20		pCi/g					
Lead-212			0.473	+/-0.123	0.102		pCi/g				(
Lead-214			0,357	+/-0.144	0.112		pCi/g		۱۵۰			
Manganese-54		U	0.0234	+/-0.0385	0.067		pCi/g		N 2111.	1.5	t√ X	
Mercury-203		U	0.0386	+/-0,037	0.0658		pCl/g			(CL	1 0X	البد
Neodymium-147		υ	-0.0278	+/-0.422	0,705		pCl/g			-	: 0	

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Certificate of Analysis

Company: Ecology & Environment, Inc. Address: 3700 Industry Ave.

Suite 102

Lakewood, California 90712 Ms. Mindy Song

Contact:

Project: Halaco CAM Metals Analysis Report Date: November 16, 2009

	Client Samp Sample ID:	le ID:	BAG-S-003 239856010			Proj Clie	ect: nt ID:	ECOL00209 ECOL007		•	
Parameter	Qualifier	Result	Uncertainty	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Rad Gamma Spec And	alysis	_									
Gammaspec, Gamma, S	Solid (Standard Li.	st) "Dry Welg	tht Corrected"								
Neptunium-239	์ บ	-0.005	+/-0,159	0,263		pCi/g					
Niobium-94	บ	0.00566	+/-0.0362	0.061		pCi/g					
Niobium-95	. υ	-0.0253	+/-0.0419	0.0655		pCi/g					
Potassium-40		17.7	+/-1.95	0,592	•	. pCi/g					•
Promethium-144	U	-0,0285	-1/-0.0345	0.0529		pCi/g		: '			
Promethium-146	υ	0.00272	+/-0.0419	0.0712	•	pCi/g					
Radium-228		0.374	+/-0,266	0,191		pCi/g					
Ruthenium-106	U	-0,365	+/-0,325	0,486		pCi/g					
Silver-110m	υ	-0,0376		0.0565		pCi/g					
Sodium-22	υ	-0,0123	+/-0.0436	0.0715		pCi/g		;			
Thallium-208		0,201	+/-0.0657	0.0599	•	pCi/g					
Thorium-234	ប	0.633	+/-1.24	1.57		pCi/g					
Tin-113	υ	0.0124	+/-0.0414	0.0717		pCi/g					
Uranium-235	υ	-0.122	+/-0.203	0.297		pCi/g .					
Uranium-238	U	0,633	+/-1.24	1.57		pCi/g					
Yttrium-88	U	0.0165	+/-0.0422	0,0747		pCi/g	• • • • •				
Zinc-65	υ	-0.0897	+/-0.0931	0.144		pCi/g					
Zirconium-95	υ	-0.0853	+/-0.0694	0.0997		pCi/g					
The following Prep M	lethods were per	formed						•			
Method	Description		,		Analyst	Date	Time	Prep Batch	1 ,		
Dry Soil Prep	Dry Soil Pre	p GL-RAD-A	A-021	•	MXP2	10/28/09	1621	916401			
The following Analyti	lani Mathada way	a nardarmad	1			•					
Method	Description	e periornen	· · · · · · · · · · · · · · · · · · ·			Analyst Commo	ints	•	•	- ;	
1	DOE EML H	ASL-300, Th	1-01-RC Modifi	ied							\
2	DOB HASL	•									
Surrogate/Tracer reco	very Test				Result	Nomi	inal R	ccovery%	Accepta	ible Lim	its
	terà year				Weanit	710113	111(1) 41				
Thorium-229 Tracer	Alphasi	ec Th, Solid	"Dry Weight C	onected"				80.4	(159	6-125%)).

20091155886 (Cill -1/4)

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Project #: 002693.2053.01.0.4.05	-012A 05	GEL Ch	ain of	Cust	Chain of Custody and Analytical Request	ıd A	naly	fical	Regn	test	26 GE	GEL Laboratories, LLC 2040 Savage Road	, tt.c	
GEL Quote#:			!	•	•		,		≺		2	Charleston, SC 29407	407	
COC Number ''': PO Number:	GEL Wo	GEL Work Order Number:	·	239856	200						Pho	Phone; (843) 556-8171 Fec: (843) 766-1178	8171 78	
Clicat Name: Ecology	40 ENVIRONMENTING		.Рвопе#:	,		•	Š	ımple Ar	alysis R	Sample Analysis Requested		e number of	container	(Fill in the number of containers for each test)
Project/Site Name:		-	Fax#:			Should this		(1)	100 P	180 / 1845 1845 1845	<i></i>			<- Preservative Type (6)
Address:	:					considered:		10/	/ v	4705 4705				
Collected by:	Send Results To: N		Song Demescon	Cor			1	9010	090 VSI 0) °°°				Comments Note: extra sample is
Sample ID * For comparites - indicate start a	Sample ID - indicate start and stop datellima	*Date Collected (mm-dd-yy)	*Time Collected (Milleary) (thimm)	Spo Code	Field Sample Filtered ⁶⁹ Marrix ⁶⁹	# E S Wilse	TSCA Regula Total aum			E 75VH	M/2M	·		required for sample specific QC
B49-M-1015		10/22/01	£0£]	£	β		•	X					왕	The Maked we
JSME-5-001		60/22/01	0/20	z	So	2	7	X	X					March College
3 SME-5-002	•	10/23/09	1030	2	Sa	٠.	3	X	X	X	X			1
SWE-5-003		10/23/09	1035	N	50	. <	N	X	X	X				1
J SME-5-1003		10[23]09	1037	2	S	. .	Ŋ	Ż	X	X			_	
4 SME-S-OOG		10/22/01	0830	72	50	· .	}	X					٠.	***************************************
3 SUE -5-005		10/23/09	1092	z	Sa		M	X	$\stackrel{\times}{\sim}$	X				4
SME -5-006		10/23/03	1110	ユ	50	9	373	X	$\frac{X}{X}$	X				
B49-5-00/		10/23/01	6700	z	50		ş. ı	X	X	X	,			
B49-5-002		10/22/01	5507	.2	So	,	1 }	$\frac{1}{2}$	$\stackrel{\times}{\lambda}$	X	,			
TAT Requested: Normal	Rush: Specify:	(Subject to Surch	rre) Fax Re	sults:	Yes	/ No	٠	Circle Del	· iverable:	Circle Deliverable: C of A -/ QC Summary	C Summa	-	/ Level	Level 1 / Level 2 / Level 3 / Level 4
Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards	own hazards applicable to	o these samples.	t if so, pie	ase list t	he hazards							1	le Collecti	
8215M	BOICE for TOHIDIESE	escl #1	\$ Moderai	(1)								Central	ر	Pacific) . Other
	Chain of Custo	Chain of Custody Signatures								Sample	Stripping a	Sample Shipping and Delivery Defails	Details	
Relinquished By (Signed)	Date Time	Received by (signed)		Date	Time .		GEL PM:	Æ						-
tyrt,	10/20/01 1330	KMM	Com	702	2705 900	Q	Method o	Method of Shipment			Ţ	Date Shipped:		
2		-23	4	-	ا ـ		Airbill#:				-			
m		3					Airbill #:							
1). Chain of Clustody Number = Circa Determined: 2). OC Codes: N = Namal Samile. TB = Tin Blank. 2D = Eigld Donlinde. 2B = Endancett Blank. MS = Matrix Soiler Samile of Community. C = Community.	etemined = Trio Blank FD = Field Danlicate. R	38 = Entinment Blank	WS = Matrix	oike Samale	MSD = Mateix	Softer Demi	James Surrel	ų di Sie Ω	0	ږ			Far	For Lab Receiving Use Only
The transfer of the second of the	- Commence of the commence of	The second secon		The second	Table - trans-	بالماية محمادة	edite ownym	1	<u>کاسی</u> (ع	ä		_		•

Custody Seal Intact?

Cooler Temp:

4.) Marix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Water, Wo-Water, SO=Soil, SD=Soilinen, SL=Soilaige, SS=Soild Water, O-Cil, Pi=Flice, P=Wipe, U-Litine, Fi-Focal, N=Nazal S) Sample Analysis Requested. Analysis Requested (A.c. 22608, 6010B/A70A) and number of containers provided for each (A.c. 3260B - 2, 6010B/A70A - 1).

5.) Preservative Type: RA = Bydrochloric Acid, NI = Nileic Acid, SH = Soulinn Hydroxide, SA = Sulfariz Acid, AA = Ascarbia: Acid, IX = Herman, ST = Soulinn Thianulfale, If no preservative is unded = Icaro: field blank

YELLOW = FILLS

PINK = CLIENT

2.) QCCodes: N - Normal Sample, TB - Thip Blank, PD - Field Daylicate, RB = Equipment Blank, NS - Mattix Spile Sample, MSD - Matrix Spile Dupigent Sample, C = Grab, C - Composite
3.) Field Filterett For Ispide austices, Indicate with a - Y - Coryse the sample was field filtered or - N - for sample was not field filtered.

7 " 77													
Project # 302693 2053.0/12405	GEL Chain	Ofic	ustod	Chain of Custody and Analytical Request	Anal	vfical	Red	lest		GEL Laboratories, 2040 Savage Road	GEL Laboratories, LLC 2040 Savage Road	Q	
				,		,	,			Charlesto	Charleston, SC 29407		7.,7
COC Number '': PO Number:	GEL Work Order Number:							•		Phone: (8	Phone: (843) 556-8171		
Clical Name: Elology for ENVIROUMENT, I	Ent the Phone #:	26 带			1	Sample Analysis Requested (5)	nalysis R	equested	© (Fill	in the nu	aber of con	(Fill in the number of containers for each test)	
Project/Site Name:	Fax#:	#			Should this	annia 2	(on)	(1 Ala	7231	_		< Preservative Type (6)	(S)
Address:				# 8	sample be considered:	φν "	 	1925 1444	57	-	<u> </u>		
Collected by ACS	Send Results To: InSony o conc.		2		led.) o /o	097 V.SI	,) 0	w/')			Comments Note: extra sample is	. š
Sample ID For composites - indicate stort and stop date fine	*Date Collected Collected Coll	Time Collected QC (Millery)	QC Code Field	Field Sample Filtared (2) Matrix (4)	adioactive SCA Regula	lmun leto 6 Aq=		254 }	06 pd=			required for sample specific QC	aple
B49-5-003	111 60/23/01	┼─-	Z	20	╬	14	1-	X	7 (
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TAT Requested-Normal Rush: Specify:	(Subject to Surcharge) F	Fax Results:	Yes Yes		°Z	Circle De	iverable:	CofA /	OC Ser	mary /	eve[1 / 1	Circle Deliverable: Cof A OCSummary Level 1 Level 2 1 1 2	
Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards	to these samples? If so	o, please	list the ha	zards							Samule C	Y.,	
		į								•	Central		· -
	Chain of Custody Signatures							Sampl	Shippin	g and D	Sample Shipping and Delivery Details	ails	T
Reinquished By (Signed) Date Time	Received by (signed)	Date A	Time		GEL PM:	PM:				•			
1745 10/26/07 1330	10/M XIBW	Crus	10/24/09		Xx Methoc	POC Method of Shipment				Date Shipped:	sed:		
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					Airbill #:	#							
1.) Chain of Chatody Number Client Determined. 2.) &C.Codex N Normal Sample, TB Tield Deplicate, EB Eguipment Blenk, MS =- Matrix Spike Sample, MSD => Matrix Spike Deplicate Sample, G =- Grat, C Compasite	EB = Equipment Blank, MS = 1	Aatrix Spilke	Sample, MSD ::	Matrix Spike D	uplicate Sam	ple, G ≔ Grab,	C+Compos	31				For Lab Receiving Use Only	ylık
1) Field Filtered: For fiquid mutrices, incliente with a - X - for yeas the strengte was field liltered or - N - for sample was not faild filtered. 4) Mutrix Codes: DW-Dinking Vates, GW-Geomed-water, SW-Strike, Water, W-Water, SO-Soli, SD-Steinnord, SC-Solid Waste, O-Cil, P-Filter, P-Wine, U-Iffine, Barteral, Wader, W-West, W-Water, SO-Solid, SD-Steinnord, SC-Solid Waste, O-Cil, P-Filter, P-Wine, U-Iffine, Barteral, Wader, W-West, W-West, W-West, W-West, W-West, W-West, SO-Solid SD-Steinnord, Waste, O-Cil, P-Filter, P-Wine, U-Iffine, Barteral, Waste, W-West, W-West, W-West, SO-Solid SD-Steinnord, Waste, W-West, W-W	was field likered or - N - for am der, WWWaste Water, WWa	apic was not ter, SO-Sof	field filtered. SD-Sediment,	St.—Studge, SS	-Solid Waste	0-01.1-11	er. P=Wine	U=Ufine R	Fenal, M.A.	ş	<u> </u>	Custody Seal Intact?	
5) Smaple Ambysts Requested. Ambystral method requested (i.e. 22608, 6010B/1470A) and nomber of containings provided for each (i.e. 2500B - 3, 6010B/140A - 1). 6) Preservative Type: HA = Eydocablante Acid, NI = Nitcle Acid, SH = Sodium Rydocalca. SA = Sallante Acid, AA = Ascorbis. Acid, HX = Henner ST = Sodium Tribentials 11 to a companying 12, and	(0B/7470A) and nomber of confi un Hydroxide, SA = Sulfufe, Az	ances provid	ed for each (i.e. torbic Acid. HX	\$2608 -3,601	08/74/70K - 1	t). Demlése Trans		1		٠.	1	Cooler Temp:	
WHITE = LABORATORY	RATORY	χ	YELLOW - FILE	ILE	and displaying	· PINK = CLIENT	LIENT	S touch 7 in	ive areas dis		_]	2 C	